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Mottled Enamel in Oklahoma Panhandle, and Its Possible Relations to Child Development

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INTRODUCTION

The condition of chronic endemic dental fluorosis, commonly called "mottled enamel," is a defective formation of the enamel of the teeth whereby the enamel is streaked with defective areas of a chalky white color or brownish discoloration with areas of pitting according to the degree of mottling. This condition is prevalent in many areas of the United States, particularly in the Great Plains area, and is disfiguring as well as somewhat disabling to thousands of individuals.

It is an unpleasant and distasteful sight to see a strapping well built, apparently healthy, youngster bare a set of teeth which is the direct opposite to the "Smile of Beauty," and completely marring this individuals appearance. It must be more unpleasant and distasteful to this individual to have to brave a dentists chair for 10 to 20 fillings and in some cases extraction almost to complete adenture and the wearing of plates. Yet this condition is present in many communities and although considerable work has been done by the United States Public Health Service in locating the approximate areas where this condition is prevalent and in studying the causative factor in the production of this defective condition, little has been done to curb its development in the Oklahoma Panhandle. As a result children continue to form their permanent defective teeth in their jaw bones by the time they are six to eight years old and parents are bewildered as to the cause of such unsightly teeth and many of the victims are accused of practicing poor oral hygiene.

It is not the purpose of this paper to criticize or to paint a picture that is darker than the condition really is, but merely to point out that the condition exists, to show the areas where it is prevalent, the source of the drinking water, the depth of the well from which this water is secured, the percentage of fluorine in the water, the element which is said to produce this condition, and to explain to the public what it is and what causes such a condition and to try and determine if there are any other physical defects accompanying this condition. To determine if possible, if there is any flaw or defective bone formations accompanying the mottled enamel, since both teeth and bone formations are related to the metabolism and assimilation of calciums, as well as to determine its possible relation to child development.

To say that the condition is present but to do nothing about it is to admit failure and if this article does nothing more than enlighten the public, the Medical and Dental professions and to stimulate thought and possibly some action to prevent this condition from developing in the generations to follow, since there is nothing that can be done as far as therapy is concerned after the permanent teeth are formed

in the jaw bones, then it will have served its purpose.

Discussion of Mottled Enamel

Chronic dental fluorosis, enamel dystrophy or endemic hypoplasis of permanent teeth called mottled enamel is a water born disease associated with the ingestion of water termed rather high in an element called fluorine which produces a cumulative poisoning which is said to be carried in the blood stream to the tooth and thus interferes with the calcification of the tooth before it erupts, causing an excessive amount of calcium fluoride to be deposited thus changing the normal yellowish semi-translucent appearance of the tooth and giving it an appearance ranging from a chalky papery white to a corroded appearance with a tendency to chip, crumble and pit according to the degree of mottled enamel.

This condition was first reported by Edgar in 1901. The first investigation in the United States was done by Black and McKay in 1916.

Probably the most detailed and extensive study of this condition has been done by H. T. Dean, dental surgeon with the U. S. public health service who is at this time conducting further studies on this condition and who has already contributed several valuable papers to science treating on dental fluorosis, and locating endemic areas and mottled enamel index over the United States.

Basis of This Study in Oklahoma Panhandle

Since this condition came to my attention it has been observed in the inhabitants of the Oklahoma Panhandle by numerous contacts with school children in particular while conducting school and immunization clinics. The presence of such a disfiguring condition in so many individuals here along with the complete ignorance of the cause of the condition by the laymen and by many professional men tempted the author to make a survey of the condition to study the degree of mottled enamel, the percentage of fluorine in the drinking water, the endemic areas and if possible to determine the mottled enamel index in the cities where there had been a continuous water supply for the past ten years and if possible to enlighten the people of the prevalence of this condition, where the danger zones were located and try to stimulate methods of preventing such a condition developing in the endemic areas in future generations; as well as to ascertain if possible, the possible relations of this condition to child development and health, particularly to its association with rickets, orthopedic conditions and posture, since there has been little or no work done along the latter lines and since a pediatrician, Dr. Lemmon of Amarillo, Texas, has called to the attention of the medical profession that it was harder to prevent bowing of legs and rickets in children who lived in endemic areas although they received an adequate amount of the vitamines in their diets. Therefore, all of the schools in the four counties of the Oklahoma Panhandle were checked for mottled enamel and a physical examination done, a history taken of those who had the condition, and the finding recorded.

Approximately 400 school children were found to be afflicted with the condition in the endemic areas.

Relation to Bone Formation

It has not been so long ago that most people considered the teeth as something separate and distinct from the rest of the body. Today we know that the teeth are intimately connected with the body and derive their food from the blood stream and develop with the rest of the body and that conditions affecting the body as a whole will also affect the teeth. This can be illustrated by defects seen in teeth following long standing fevers and acute diseases of childhood.

Teeth are subjected to the same factors which influence the development and growth of the bones since both bone and tooth development is closely connected with the metabolism and assimilation of calcium. Mottled enamel is the sign, manifested in defective enamel of the teeth, of a disturbance of the calcification of the teeth.

There has been considerable experimental work done on animals fed on a high fluorine diet. This work showed that there was a derangement in bone formation along with the development of mottled enamel when the animal had a high content of fluorine in the diet.

An attempt was made to check this animal experimental work with children who had mottled enamel. Twenty-five students from an area where mottled enamel was endemic were chosen who had mottled enamel ranging from very mild to moderate. Blood calcium was run and X-rays of the bones taken.

The blood calcium was within normal range and the X-rays revealed no bony pathology or apparent bone changes over the normal that was detectable by X-ray films.

In the entire group of approximately 400 examined, who had mottled enamel, approximately 10 per cent gave a history of having experienced one or more fractured bones. This seems to be rather high when one considers that this is a plains area with practically no trees or hills for children to fall from. 15.30 per cent of this entire group showed definite signs of rickets by two or more detectable signs such as beading and flaring of the ribs, Harrisons groove, bowing of the legs, pigeon breast and prominent bosses, even though 76 per cent were breast fed and five per cent were breast and bottle babies combined. Whether this figure is high is purely a matter of opinion since the literature shows that signs of rickets in various groups of children ranges from 10 per cent to 90 per cent, however, when one considers that these individuals were practically all in fair economic circumstances and enjoyed fair dental and medical care up until three or four years ago and when one considers, too, that this country enjoys an abundance of sunshine 12 months out of the year one can assume, at least, that this rachitic index is above normal.

Forty-three per cent of the entire group were 10 per cent or more under weight, 20.25 per cent had poor postures.

Although there was no macroscopic pathology detected by X-ray and a single blood sample from 25 affected individuals showed a normal blood calcium. Taking all of the other points into consideration such as fractures, rickets, markedly high percentage of under weight, as well as to consider that bone and tooth formation are closely connected, it seems feasible that when one is affected the other is likewise affected and that there is a definite relation between mottled enamel and bony development.

Relation of Mottled Enamel to Other Oral Conditions

Although no definite tabulations were done on the percentage or incidence of dental caries, gingivitis, malocclusions, pyorrhea and poor oral hygiene these conditions have been closely observed in frequent physical examinations of school children in the endemic areas in the Oklahoma Panhandle and from this observation I believe it can be truthfully stated that the incidence of caries is high especially in those cases which are beyond the questionable and very mild classifications of mottled enamel. Many of these individuals have malocclusions. A very high percentage of the cases which have pitting of the enamel have caries.

A very high percentage of these individuals, especially those who have the corroded appearing teeth and dark brownish staining have gingivitis and pyorrhea and poor oral hygiene. Whether there is some relation between dental fluorosis and gum infections cannot be said but it would seem more logical to assume that due to the inability of these individuals to improve the appearance of their teeth and remove the brownish stain by brushing and good oral hygiene, become discouraged and discontinue brushing the teeth and as a result of this poor oral hygiene gingivitis develops and then pyorrhea.

Possible Relations of Fluorosis and Child Development

The question of child development covers a wide field. There are many factors which must be weighed in this particular subject and many angles to be investigated. The viewpoint of the examiner determines the grade to a large extent because what is poor posture, etc., in the eyes of one examiner may not be so in the eyes of another. However, the author has tried to adhere to recognized standards to the letter and has approached this subject with an open mind.

In the relation of child development to chronic fluorosis it seems logical to assume that if this poisonous element is taken into the system in large enough quantities to affect the normal development of teeth that other protoplasmic substances and other parts of the body especially that which relies on the assimila-

tion and metabolism of calcium would be affected in a like manner.

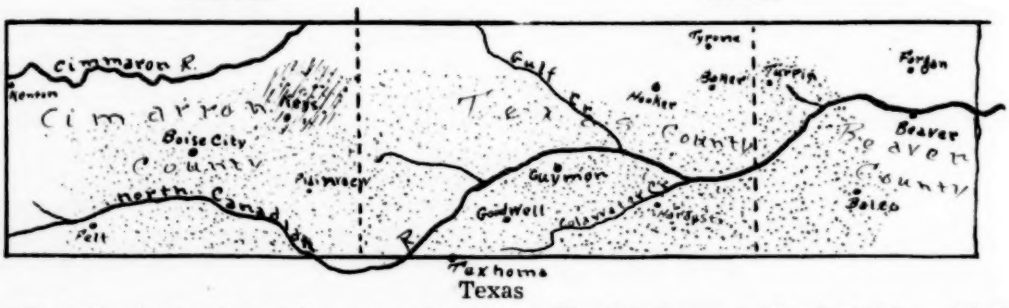
Laboring under this hypothesis those children who had signs of chronic fluorine poisoning manifested by signs of mottled enamel of the teeth were given a physical examination noting particularly defects in bodily development, posture and bony development. It should be stated here that the families of these children have all been in fair circumstances financially speaking until the past three or four years, all had fairly good medical and dental care. The larger per cent of which were breast fed and living in a country where there is an abundance of sunshine 12 months out of the year.

A total of 76.8 per cent of these students gave a history of being breast fed, only 10.3 per cent were artificially fed and 5.8 per cent were breast and bottle babies combined. Of the entire group 43 per cent were 10 per cent or more under weight measured according to Robert M. Woodbury, Bird T. Baldwin and Thomas D. Wood, chart of the American Child Health Association.

A total of 20.25 per cent had poor posture, 15.30 per cent had definite signs of rickets, 30.6 per cent had signs of chronically infected, hypertrophied and diseased tonsils, 3.60 per cent had systolic or diastolic murmurs heard at the mitral area of the heart, 9.9 per cent gave a history of experiencing one or more fractured bones, 18.45 per cent of these students had brothers and sisters below six years old who were running the risk of developing chronic fluorine poisoning by consuming water from the same source of supply from which their afflicted brothers and sisters had partaken.

Weighing all of these figures and facts and assuming that children developing in an environment that is conducive to good development and in spite of this the examinations show that approximately 43 per cent are considerably under weight, 20 per cent have poor postures, and 15 per cent have definite signs of having had rickets and approximately 10 per cent having experienced broken bones and apparently more have malocclusions than in individuals with normal enamel. Knowing that fluorine is a protoplasmic poisoning and affected the assimilation of calcium, it would seem reasonable to think or assume and I think can safely be stated here that the above findings are ample proof that chronic fluorosis has a definite relation to child development and thus is a predisposition to rickets, poor posture and under weight and possibly a predisposition to fractures.

MAP OF OKLAHOMA PANHANDLE SHOWING ENDEMIC AREAS AND DEGREE OF MOTTLED ENAMEL

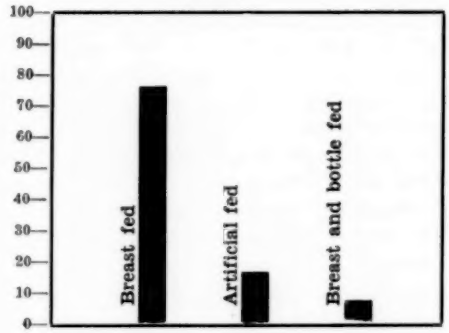


The above map shows the areas where mottled enamel is endemic in the Oklahoma Panhandle. The dotted area is the approximate boundary. The extreme north and western areas of Cimarron county and the extreme northwestern area of Texas county were not shaded because this area was not thoroughly checked due to a lack of schools and to sparseness of population.

The dotted area predominated in mottled enamel of the very mild class. The shaded area around Keyes was the area where the condition was more marked as to incidence and degree.

The following are graphic tabulations of the findings taken from the histories and physical examinations of those examined with mottled enamel.

TABLE I



The above table shows 76.80% were breast fed, 10.35% were artificial fed and 5.85% were breast and bottle combination fed when infants. The remaining 7% could give no authentic history of infant feeding.

TABLE II

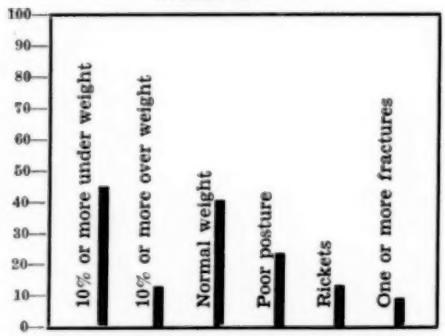


Table II shows 43% were found to be 10% or more under weight. 15% were 10% or more overweight. 42% ranged within normal weight. 20.25% had evidences of poor posture. 15.30% showed definite signs of rickets. 9.90% gave a history of experiencing one or more fractures of the bones.

TABLE III

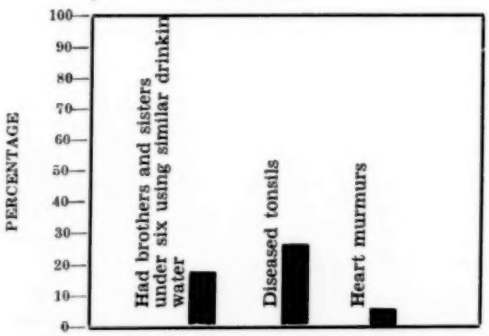
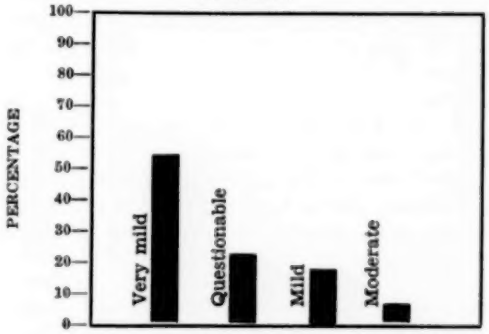


Table III shows some miscellaneous findings. 18.45% of those examined had brothers and sisters under six years old who were using similar drinking water and thus running the risk of becoming afflicted with mottled enamel. 30.60% had diseased tonsils. 3.60% had heart murmurs systolic in time, heard at the mitral area.

TABLE IV



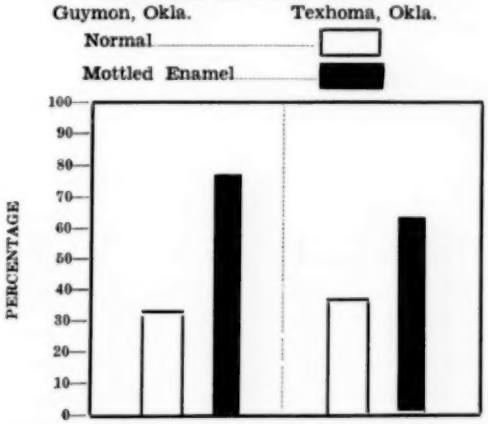
Degree of Mottled Enamel in percentage found on examination of approximately 400 school children in the areas in the Oklahoma panhandle.

The above graph is the degree of mottled enamel found in the endemic areas of the Oklahoma Panhandle.

The endemic areas were located by a survey of the schools and by checking school physical examination records. When an endemic area was located the teeth of the children were checked, from the fifth grade up, and those having mottled enamel were classified as to the grade of mottled enamel using the H. T. Dean system of grading, then a history was procured and a physical examination done.

TABLE V

MOTTLED ENAMEL INDEX



Mean fluoride (F) content in P.P.M. over six month period 1.45. Water supply two wells 150 feet apart depth 330 feet drilled 1928-1929.

Mean fluoride (F) content in P.P.M. over six month period 1.25. Water supply two wells depth 230 feet drilled 1924.

Only two places in the Oklahoma Panhandle have had a continuous water supply for ten years or more where enough

children had consumed this water for the first six years of their life. Therefore this survey was restricted to these two areas as far as determining the mottled enamel index.

In Guymon, Oklahoma, there has been a continuous water supply for ten years derived from two deep wells operated by the Oklahoma Electric and Water Company. These wells are 330 feet deep and showed a mean fluorine content, over a six month period, of 1.45 parts per million. Eighty-two children who had consumed this water all their lives were available for examination. Nineteen or 23 per cent of these had normal enamel. The remaining 63 or 77 per cent showed definite mottled enamel ranging from very mild to moderately severe, the greater per cent coming under the former classification.

Texhoma, Oklahoma, was the other community with a continuous water supply since 1924. They derive their city water from two wells 230 feet deep which are operated by the Cimarron Utility Company. The mean fluorine content of this supply was 1.25 parts per million over a six months period.

Thirty-three children were available for examination, who had used this supply continuously all of their lives or at least the first six years of their lives. Twelve of these, or 36 per cent, had normal enamel. The remaining 21, or 64 per cent, showed definite signs of mottled enamel ranging from very mild to moderately severe. The majority being very mild.

Water Supplies of Oklahoma Panhandle

The entire water supply of the Oklahoma Panhandle is derived from wells. A rather thorough check of the municipal wells and school wells in the endemic areas has been carried on over a six month period to determine the fluorine content of the water. These wells range from 132 to 330 feet in depth. The fluorine content ranges from 0.6 to 2.6 parts per million in the various wells.

Wells that were checked in areas where this condition was not endemic ranged around 0.6 parts per million in fluorine content of the water.

A check was made of the few shallow wells ranging between 50 and 75 feet deep to determine the flourine content of this water. These wells were in creek and river bottoms and showed a flourine content of approximately 1. part per million.

Further investigation of the water supply both municipal, schools and private wells is being carried on but is rather slow due to the expense of the chemical analysis of the water.

Possible Methods of Controlling Chronic Fluorine Intoxication

Since there is no cure of chronic fluorine poisoning once it has developed the chief aim is prevention. It has been suggested by some authorities investigating this condition that a low calcium intake hastens the onset and development of this chronic fluorine poisoning. In other words a high fluorine intake on a normal consumption of calcium in the diet will produce the condition as well as a comparatively normal intake of fluorine on a comparatively low calcium intake in the diet. In view of this evidence that a diet high in calcium tends to offset the effects of fluorine it would seem feasible that as a protective measure for children living in the endemic areas and questionable areas to partake of a diet relatively high in calcium content. Calcium salts do not dissolve in an alkaline medium but are soluble in an acid medium and can therefore be taken up by the blood stream and assimilated better. Fats react with calcium to form an insoluble soap. Thus a diet that is favorable to the increase in acidity of the intestines as well as one low in fat content may be considered even though some investigators have found that acid diets are conducive to carious teeth and that basic diets tend to arrest carious processes in four months time.

One cannot rely on the above too much for prevention however because there seems to be some difference of opinion of investigators as to the results of fluorine poisoning. Some state that there is a rarification of the calcium deposit while others state that there is an over abundance of calcium deposited.

At any rate the giving of calcium to correct teeth disorders as well as bone disorders has been over worked and calcium can be harmful as well as helpful.

It seems to be the concensus of opinion of the majority of those who have carried on investigations of this condition that the causative factor lies in the fluorine

content of the water supply used for drinking and cooking purposes.

This being the case the safest thing as far as a preventive measure is concerned would be to seek a water supply for ingestion and consumption of c h i l d r e n in their formative years and years of greater development that will be below the danger level as to f l u o r i n e content. This may prove a troublesome task in an area where there are no cisterns, no s u r f a c e water supplies and where the majority of the people consume water from wells. However this task though great and expensive would seem well worth while when one views it from a public health angle and not from a financial view point.

Summary and Conclusions

1. Results of survey made in Oklahoma Panhandle on Chronic Fluorine Intoxication was stated, the endemic areas located, the mottled enamel i n d e x derived, the fluorine content of the water supply of the different areas given along with the depth of the wells, along with the findings on physical examinations of t h o s e afflicted with this condition.

2. That there is evidence which indicates that there is a definite relation between chronic fluorine poisoning as detected by mottling of the enamel and child development, particularly as to predisposition to developing underweight, p o o r posture, rickets and orthopedic conditions.

3. Possible methods of controlling and preventing this condition were suggested.

4. Dental c a r i e s, gingivitis, malocclusion, beginning phorrhea and poor oral hygiene incidence in mottled enamel is high.

Acknowledgment

I am indebted to, and wish to take this opportunity of thanking the following persons for their cooperation and help in carrying out this investigation. To Dr. Chas. M. Pearce, Oklahoma Health Commissioner, for his cooperation in making it possible for this investigation and for his reading and criticism of this script. To Drs. Collopy, Murhpy and Bell of the Child Welfare Department of Oklahoma Public Health Department for their assistance and suggestions. To Dr. Bertram and Kersey of the Dental Hygiene division of the Oklahoma State Health Department for their assistance, suggestions and grading of the cases of mottled teeth. To Drs. Lightner and Gruebbel of the dental profession in the endemic areas who offered valuable suggestions and criticisms; to the water superintendents and authorities of t h i s area for their cooperation, to the many school authorities and parents in the Oklahoma Panhandle without whose cooperation and assistance this investigation could not have been carried out. To Paul Thurber, sanitary engineer of this district for his handling of the investigation of the water supplies and to my office and nursing force for their assistance in the examinations and compiling the records.

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Recurrent Iritis in Undulant Fever With Concurrent Rheumatic and/or Arthritic Disease*

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The diagnosis and treatment of arthritic diseases is a problem requiring the best that an internist can give to the patient. The patient needs to be considered as a whole and not only in respect to his joints. It therefore behooves the internist who is handling arthritic and rheumatic disease to ask for the assistance of specialists. In that way he may arrive at an opinion in respect to particular organs which can be correlated into the complex picture that makes up the rheumatoid syndrome.

While working with a number of cases having rheumatic or arthritic disease symptoms a certain number that are quoted herewith had laboratory findings indicating the presence of undulant fever infection as well as eye symptoms. Curiosity having been aroused, and the problem requiring rather careful consideration from the eye standpoint, the ophthalmologist's help was enlisted in working out this rather unusual set of cases in which rheumatic disease symptoms, eye manifestations, and positive undulant fever skin and serological tests were present.

It is important to keep in mind that the collaborating ophthalmologist, co-author of this paper, does not positively and unequivocally hold that the chronic state of systemic brucellosis was the true and only cause of the ocular pathology. In view, however, of the fact that these cases had no definite foci of infection; that the Wassermann tests and urinalyses were negative; also no evidence of the presence of tuberculosis; it is justifiable to assume that chronic brucellosis was the etiologic factor. It is the desire of the ophthalmologist to stress the fact, in this paper, that in proper geographical areas one should keep in mind that chronic brucellosis may be an etiologic factor in the causation of ocular disease, especially iritis. One should test for same properly and intelligently when the other more common causes of eye symptoms have been searched for and not found.

The cases reported herewith present rather similar history and findings in that each of them is suffering from either arthritis or has suffered from a rheumatic disease syndrome. Each case also had eye findings, some of which have been quite serious. Strongly positive skin tests when tested with the undulant fever organism were present. In addition to the very strongly positive skin tests, they yielded a positive opsonic index test for undulant fever, indicating active infection when considered in connection with the skin test. Some of them also had positive agglutination tests. In accordance with the criteria of Huddleson a diagnosis of positive chronic undulant fever infection was established because of the fact that the opsonic index test revealed phagocytosis in mild, moderate or marked degree of less than 60 per cent and because of the presence of a positive skin test in all five cases, plus a positive agglutination test in four of the cases.

Tables I and II set forth below reveal the basis upon which a diagnosis of active undulant fever infection was arrived at in these cases.

TABLE I

Determination of phagocytosis activity as reported by Keller, Pharris and Gaub, and adapted from Huddleson, Johnson and Hamann. The opsonocytophagic activity of the blood.

Classification	Number of bacteria per polymorphonuclear cell
1. Negative	None
2. Slight	1 to 20
3. Moderate	21 to 40
4. Marked	41 or more

*Read Before the Section on Eye, Ear, Nose and Throat, Annual Meeting, Oklahoma State Medical Association, Muskogee, Oklahoma, May 10, 1938.

TABLE II

The diagnosis of undulant fever according to results of the skin, agglutination and opsonocytophagic tests as reported by Keller, Pharris and Gaub, and adapted from Huddleson, Johnson and Hamann.

Agglutination Test	Skin Test	Opsonocytophagic power of blood	Status toward Brucella
Negative	Negative	Cells negative to 20% slight phagocytosis	Susceptible
Negative	Positive	Cells negative to 40% marked phagocytosis	Infected
Positive	Positive	Cells negative to 40% marked phagocytosis	Infected
Negative	Positive	Cells 60% to 100% marked phagocytosis	Immune
Positive	Positive	Cells 60% to 100% marked phagocytosis	Immune

CASE 1, E. W. H., age 33: Recurrent iritis, both eyes. Eye symptoms began in 1926. He is now blind. They have consisted of redness and irritation of the eyes, attacks of iritis, and impairment of vision. He was treated by a number of good oculists, including the Mayo Clinic. He was told that he had iritis, detached retina, and scars of the retina and choroid, due to some type of infection. The trouble would come and go periodically. Tuberculin tests were made. The first was negative, the second tuberculin test was questionably positive. He received tuberculin treatment for one year. In spite of this treatment relapses continued to appear, at first only occasionally and mild in nature. He then noticed that his eyes became progressively worse until only light perception was present.

Laboratory tests for brucellosis revealed +4 agglutination in all dilutions including 1-200. Opsonic index test yielded 20 per cent moderate phagocytosis and 4 per cent marked phagocytosis. A very severe positive skin test with suppuration developing locally was present. Later skin tests with very small amounts of antigen continued to reveal strong positive reaction.

CASE 2, R. E. R., age 29: Recurrent iritis, left eye. This patient, who has a Marie Strumpell type of spondylitis, gives a history of reddening and irritation of the left eyeball occurring off and on since he began to have his serious symptoms of arthritis in the spine. March 1, 1937, he noticed redness present in the white part of his left eyeball, and photophobia. In June, 1937, pain in the left eyeball following a long drive appeared. Gradually loss of vision of the left eye began to appear in April, 1937, and became progressively worse until August, 1937, when only light perception was present. Tuberculin test was negative. Foci of infection were not found. Other commoner causes of iritis were not found. This patient experienced severe reactions to small doses of brucella bacterine. His tests for brucellosis revealed:

1. A +3 reaction on skin test.
2. Complete agglutination in all dilutions up to 1-200 on diagnostic examination.
3. Twelve per cent moderate phagocytosis on opsonic index test.

CASE 4, Dr. E. M., age 43: Recurrent ulcer, right cornea. Patient helped make antiserum Missouri State Farm, Agriculture Department, in 1911. In 1916 developed acute corneal ulcer right eye; also noticed general illness and cough. A tuberculosis specialist thought he had tuberculosis. This never could be definitely substantiated. In 1917 a rectal fistula developed. Later recurrent attacks of lumbago-like episodes occurred. Summer of 1928 had an influenza-like attack with recurrence of the old corneal ulcer in the old scar. At this time drank milk from a cow that had udder trouble but which tested negative for tuberculosis. In 1936 skin test for brucellosis revealed a severe positive test. Agglutination test was negative. The skin test caused his eye symptoms to flare up. It caused fever and general malaise and a flare-up of his back symptoms. Vaccine injections would cause severe reaction. While taking large dose injections of vaccine his eye trouble flared up in summer of 1937. Opsonic index test was strongly positive in 1937, after having taken vaccine treatment, however.

CASE 5, P. W. B., age 48: This patient some few years ago had a systemic infection which caused him to run fever with all of the associated signs of systemic infection, such as malaise, and muscle and joint aches. In addition at that time he had an iritis which according to his statement could not be explained on any definitely known basis. He was seen later by me with a subacute synovitis and swelling and discomfort of the left knee and left ankle. Medical management for his arthritic subacute symptoms resulted in a recession. No foci of infection were found. After the swelling disappeared the patient again developed trouble some seven months later. At this time there was swelling present in the right forefoot at the base of the toes. X-ray revealed demineralization of the head of the 2d, 3d, and 4th metatarsal bones.

Because of his recurrent symptoms serologic and skin tests for undulant fever were done. The agglutination test revealed complete agglutination in dilutions of 1-25 and 1-50, marked agglutination in dilutions of 1-100, and partial agglutination in dilutions of 1-200. The opsonic index test revealed 20 per cent marked phagocytosis, 70 per cent moderate phagocytosis, and 4 per cent slight phagocytosis. The skin tests revealed about a 2+ positive reaction for undulant fever. The patient was put on specific vaccine therapy. Disappearance of the arthritic symptoms again occurred.

Conclusion

This report is made for the purpose of calling attention to the following facts:

1. Ocular symptoms and signs may occur in an individual who has active chronic brucellosis.

2. Vaccine treatment may produce localizing reactions in the eye, as illustrated by Case 4.

3. While we cannot absolutely state that beyond all doubt the eye symptoms were caused by the chronic undulant fever infection in the quoted cases, we feel that it is quite probable that such is the case. The similarity of history and symptoms and of the presence of unmistakable serologic and immunologic skin tests for brucellosis are in favor of it.

4. We feel that in cases having ocular manifestations the factor of chronic brucellosis should be kept in mind and search-

ed for by proper laboratory and skin tests. This is especially true in cases in which a definite cause of the ocular manifestation cannot be adequately determined, such as syphilis, tuberculosis, or foci of infection.

5. Attacks of iritis in these cases were relatively free from pain.

Reference

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Undulant Fever
Correlation with Fatigue and Low Grade Fevers

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Low-grade fevers have been found frequently among the women students of the University of Oklahoma. Too often they have been unexplained. They have always been a source of interest as well as concern. This past year we have had an additional staff member, so it has been possible to study and watch these students a little more carefully.

All women students who participate in any kind of physical education are given a complete physical examination before they may enter any activity. Since all freshmen and sophomore women are required to take some type of physical education this examination includes all the women in these two classes with the exception of those excused by their advisers or deans. The girls who were working were also required to have a complete examination. Because of this new ruling many juniors, seniors, and graduate students were seen. All upper classmen who had done their first or second year's work here had had an examination at that time. It was interesting to note that most of those students who had had unexplained elevated temperatures previously still registered above normal.

The Mantoux tuberculin test (O.T.) and the Wassermann test are included in these examinations. An effort was made to rule out early tuberculosis as a cause of the low-grade temperatures. All positive reactors to the tuberculin test had X-rays of their chests. In the doubtful cases they were referred to the specialist. Because of insufficient help in the laboratory a complete blood count and urinalysis were done only when indicated by family history, personal history, or findings at the time of examination.

One hundred cases of undulant fever are considered in this report. The ages ranged from 16 to 52. Each student had an intradermal test and a blood agglutination test. A suspension of killed organisms was used for the skin test. In reading the reaction edema less than 5 mm was considered negative. All the blood specimens were sent to the State Health Laboratory at Oklahoma City for an agglutination test at the same time that the skin test was given. This was done to prevent any possible error in the agglutination which might be due to the intradermal test. Those tests which were positive only in low dilutions are not considered in this report. The serum dilutions reported were 1:20, 1:40, 1:80, 1:160. We had no means of determining the opsonocytophagic index. This test could not be done in our laboratory and we had no way to get the citrated blood to the State Laboratory within the required time. Many of the tests were done on working students and they could not well afford the fee of a private laboratory.

Elevated temperatures were present in 87 per cent of the cases. The usual reading was from 99.4 to 99.8. The students of advanced standing who are included in this report are those who had had elevated temperatures recorded over a period of four to five years. Many had their temperatures taken at intervals, and some had as many as nine recorded temperatures above normal. There seems to be no spe-

cial elevation in the afternoon, as the morning temperatures were frequently as high as those in the afternoon. Any temperature reading which might have been affected by an upper respiratory infection was discarded and the patient rechecked after the infection had subsided.

Fatigue was the almost universal complaint. One case seems to warrant special mention. A very normal-appearing girl returned to our office soon after classes began because of exhaustion when she danced. We examined her chart and could see no reason for this, so we advised her to dance less strenuously for a while. A few weeks later she returned with the same complaint even though she danced less strenuously. Her temperature was normal. Blood counts showed a white cell count around 10,000 each time. A test for undulant fever at this time showed a positive skin test and also a very positive agglutination test. Vaccine therapy proved very successful.

A second girl complaining of fatigue provided an interesting study. She had fatigued easily for several years. Her mother and sister were diagnosed as having tuberculosis. She was under suspicion even though her tuberculin test had been negative five years prior to entry and again when taken here. An X-ray made three months before she entered school was read as being "suggestive." Her temperature taken at intervals was normal. Her systolic blood pressure was below 100. When tested for undulant fever her skin reaction was weakly positive, but the blood showed complete agglutination in all dilutions which are reported by the laboratory of the State Health Department.

Arthritis was a major complaint in 12 cases. The youngest girl was 17 years old, while the oldest was 52. A twin 21 years old consulted us because of arthritis. She gave a definitely positive skin reaction when tested, and her blood report showed complete agglutination in all dilutions. Her twin who had no complaints of any type was checked. Her skin reaction was negative and agglutination test two plus in the 1:20 dilution only. Seven years prior to this they had obtained milk from a neighbor whose cow had Bang's disease.

In this series of cases only one acute or semi-acute case is included. In November, 1937, while attending school in a neighboring state this girl became ill. The diagnosis was lobar pneumonia. Her temperature was 104, and she was irrational for several days. Her blood count showed 6,000 white blood cells. She never produced any sputum. After several weeks her temperature became normal, and she was brought to her home in Oklahoma by ambulance. One week later her temperature again rose to 105. Her chest was negative. This was in January, 1938. Gradually her temperature reached the 99° level and remained there. On February 3 an undulant fever test was two plus in the lowest dilution. Fatigue and the low-grade fever continued. March 5 another specimen of blood was sent to the laboratory which reported complete agglutination in all dilutions. The skin test was slightly positive at that time.

In reviewing these 100 cases of undulant fever we find that the youngest was 16, the oldest 52. An attempt was made to determine the source of infection, but this was most unsatisfactory. Even though they used pasteurized milk at present most of them had used raw milk for years. Then too, they had no idea of what type of milk was being used at their boarding houses or what had been used in previous years. A few came from homes where the cattle had been tested and some of the herd found to have Bang's disease.

Fifty-five per cent of the cases gave both positive skin reactions and positive agglutination tests. Twenty-seven per cent gave only positive skin, while 18 per cent gave only positive agglutinations. Only two cases of this series had the opsonocytophagic index determined, and they were both positive for infection. A most interesting observation in this relation to the tests was the fact that in all but one of our most positive skin reactors when the center sloughed the blood report came back absolutely negative or very weakly positive.

Complete blood counts were secured in only 60 per cent of the cases. Thirty-five per cent of these showed an anemia, the counts ranging from 3,180,000 to 4,000,000, while 65 per cent showed a count from 4,000,000 to 4,750,000. The hemoglobin varied from 65 per cent to 95 per cent Sahli. The white blood count seems to show a

greater variation than the red blood count. The percentage of abnormal counts was greater than in the red blood count.

44% of cases had WBC of 3,700- 7,000
23% of cases had WBC of 7,000- 7,700
32% of cases had WBC of 7,700-11,500

The various counties represented in this group and the number from each county are given in the following list:

Cleveland	19%	Dewey	1%
Oklahoma	15%	Seminole	1%
McClain	6%	Cherokee	1%
Pottawatomie	5%	Johnston	1%
Tulsa	4%	Custer	1%
Carter	4%	Wagoner	1%
Major	3%	Kay	1%
Washington	3%	Jefferson	1%
Garfield	3%	Osage	1%
Choctaw	3%	Comanche	1%
Jackson	3%	Kiowa	1%
Grady	2%	Ottawa	1%
Logan	2%	Muskogee	1%
Caddo	2%	Rogers	1%
Stephens	2%	Okmulgee	1%
Garvin	1%	Out of state	7%
Kingfisher	1%		

It does not seem likely that these students acquired the disease while attending school in Norman since the greatest number of these cases were checked because of low-grade temperatures, and in almost all cases the initial temperature taken at the time of entering the university was elevated. Those complaining of fatigue had usually noticed it for a variable period of time prior to entry.

We believe that all persons who continue to have a low-grade temperature should be tested for undulant fever. Those persons who complain of fatigue, even though there may seem to be an adequate reason for this, should always be tested. We believe this is most important, especially so in younger people, since we think of youth as being symbolic of endless energy.

Chronic Gonorrhea

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Recent estimation made by public health officers showed that the population of the United States is heavily infected with venereal diseases. The greatest part of the infection is due to gonorrhea and its germ, the gonococcus. It was said that more than 80 per cent of the venereal diseases are caused by gonococci, and that about ten million men and women of this country are suffering from gonorrhea or its complications.

This great proportion of gonorrhea among the venereal diseases is due to the negligence of the patients who easily become used to a little discharge from the urethra or the vagina, and to the negligence of the doctors who still consider gonorrhea as an easily treated disease which can be cured with a few irrigations, instillations, and a couple of shots into the gluteal muscles.

Negligence of both the patient and the doctor is the main factor in pushing a gonorrheal infection into the chronic stage, while the anatomical construction of the male genito-urinary apparatus is another. So it happens that gonorrhea persists, and there is little that we can do about it.

Preaching to the public the uselessness of quack remedies and the need of proper medical care does not help much alone if the medical profession in general does not change its attitude towards the disease, and does not treat the cases of gonorrhea more seriously.

It is improper to tell the patient that his discharge from the urethra does not amount to much; that it can be treated in a few weeks (or, as they have been led to believe by the newspapers, in a few days). Gonorrhea is a disease which is often more difficult to eradicate than syphilis. It is a disease which can destroy the happiness of family life more often than any other of the venereal diseases.

To make a diagnosis of chronic gonorrhea, it is not sufficient to rely upon the subjective symptoms and the local signs

of the disease. Indeed, there are usually very few subjective complaints. The frequency of micturition is less marked than in the acute stage. There is no urgency in passing water, and the slight discharge, or morning drop, is often missing. The patient may have difficulties in his sex life which amount to a sexual neurasthenia. He may have pains vaguely localized to the perineum and the lumbar region or to some joints. Often, he is classified as a rheumatic patient and treated as such with the innumerable remedies suggested lately for this affection.

No case of chronic gonorrhea can be diagnosed unless the doctor makes a routine inquiry as to the previous sex life of his patient. Of course, there are cases met by the specialist in which the presence of a chronic gonorrhea is evident, but I am speaking from the standpoint of the general practitioner, who acts as a sort of first casualty station for human suffering. He is the one who ought to have a specially sharp eye and become aware of the true nature of his patient's general ill health.

If chronic gonorrhea is suspected in a patient, the proper diagnosis is made by a series of tests:

1. The urine is examined by the four glass test (the fourth glass contains urine voided after a prostatic and vesicular massage) for the presence of pus and shreds.

2. The urinary sediment, the prostatic secretion expressed by massage, and, if there is any, the urethral discharge is examined microscopically for the presence of gonococci.

3. Cultures should be made on special media of the prostatic and vesicular secretions.

4. A complement fixation test made of the blood of the patient to show whether there are hidden metastatic foci of gonorrheal infection.

5. If all these tests are negative they are repeated after a provocative injection of gonococcal vaccine if the presence of gonorrheal infection is highly suspicious.

The value of these tests is very variable in certain cases. The four glass test may be negative today and positive a few days later. The microscopic examination and the staining of smears with the gram method may give doubtful results, especially when the number of gonococci is small. Russian physicians recently showed that often the gonococci remain gram positive, both in smears and in cultures. The complement fixation test is often negative; on the other hand, it may remain positive even after the cure of chronic gonorrhea has been established.

If both the clinical indications and the results of laboratory tests show that the patient has gonorrhea in the chronic form, the next step is to determine the focus of gonorrheal infection. As known from the anatomy of the male genito-urinary organs, there are many side tracks, blind sacs, glands and ducts in the urethra where gonococci can easily hide themselves. Practically all these side tracks are inaccessible to local antiseptics and the usual methods of treatment by injection, irrigation, or instillation. Persistence of the gonorrhea is always due to a focus in these side tracts. Most of the hidden foci can be detected by means of palpation with bougies or by means of anterior or posterior urethroscopy.

The focus of a persistent gonorrhea may be in one or several of the following structures: 1. The paraurethral ducts. 2. Littre's glands and ducts and the lacunae of Morgagni. 3. Cowper's ducts and glands. 4. Prostatic ducts and the prostate gland. 5. The ejaculatory ducts and the seminal vesicles. 6. The vas deferens and the epididymes, and I have read but never have seen a case of lower ureteral infection.

Treatment of chronic gonorrhea is mainly a fight against an infection localized in one or several of the side tracts. Our aims should be: 1. Establishment of proper drainage from these structures. 2. Efforts to reach the gonococcus with antiseptics. 3. Prevention of formation of fibrous tissue and stricture. The means are instrumental treatment, use of antiseptics of mild concentration, but sufficiently strong to kill the germs, massage, and the use of sulphanilamide in small doses.

If the paraurethral ducts are inflamed, they are obliterated best by an electric cautery.

Sometimes gonorrhea persists because the gonococci are stored in the subpreputial sac, and the ducts (Tyson's) at the base of the frenum, usually the instillation of a one per cent solution of picric acid is

sufficient for the treatment and cleansing of the subpreputial sac. If there is an abscess of Tyson's duct it should be opened and the cavity cauterized.

One of the most frequent causes of chronic gonorrhea is a gonorrheal infection of Littre's glands and of Morgagni's lacunae. There may be a simple inflammation, or a purulent one, with occasional development of a periurethral abscess. The urine contains numerous pus shreds intermittently, and the urethroscopic examination will show which of the glands are involved. The treatment is irrigation followed by a straight bougie and massage of the urethra upon the bougie, followed again by irrigation. This treatment should be carried out once or twice a week. If only a single area in the urethra is affected, it can be cauterized in the urethroscope.

A periurethral abscess usually has to be opened and the abscess cavity cauterized with chemicals—one can do this with a knife through the skin. It is evident that the after treatment would include the use of sounds.

Suppurative cowperitis may occur. In that event put the patient to bed, use hot packs, and, if necessary, incise and drain.

The gonococcus has the ability to penetrate between the epithelial cells of the urethra into a subepithelial connective tissue which becomes hyperplastic. Such an event is shown by irregularity of the urethral surface felt on passing a bougie or a sound. Treatment is gradual dilatation of the urethra.

In a great majority of gonorrheal cases, a chronic prostatitis develops, mostly when the case has not been properly treated. Here, besides the general symptoms of chronic gonorrhea, one finds the fourth glass of the four glass urine test with turbid fluid containing shreds. Rectal palpation shows irregularities of the prostatic surface, pain, and tenderness on pressure. The secretion expressed contains pus cells, occasionally also gonococci. If an old case, the inflammation is upheld by a mixed infection. Very often the ejaculatory ducts are also obliterated, and the seminal vesicles are a focus of infection. The chief measures of treatment are: 1. Massage. 2. Posterior irrigation, and 3. Dilatation with sounds;—some inject the gland transrectally.

The prostatic and the vesicular massage is the most important part of the treatment of chronic prostatitis. It is made twice a week for six or eight weeks followed by a week's rest, and repeated until the urine passed subsequent to massage is free from turbidity, the urine sediment and prostatic secretion is absolutely free from gonococci, its culture is sterile, and it does not contain more than five pus cells per high power field under the microscope. After each massage the urethra should be irrigated with an antiseptic solution, as potassium permanganate, silver nitrate, or mercury oxycyanide. The use of sounds is also important since they help drainage of the prostatic and ejaculatory ducts. If the condition does not quickly clear up by these measures, you can instill a one per cent solution of silver nitrate into the posterior urethra in order to cause a mild hyperemia and posterior urethritis. Sometimes the ejaculatory ducts have to be catheterized. It is only rarely that a vesiculitis does not clear up by this method of treatment so that surgical intervention such as vasotomy, vasostomy, or vesiculectomy becomes necessary.

Epididymitis is usually known as an acute infection and complication of an acute gonorrhea, but it still exists in many cases after the violent, acute symptoms have subsided. The sterility of the male is due to chronic epididymitis, which mainly consists in fibrous tissue formation. Since a chronic epididymitis may any time exacerbate, and since the epithelial surfaces of the ducts are not accessible for local treatment, one has to use certain adjuvants. The use of adjuvants is indicated also for the reason that most of the chronic cases are due to a mixed infection.

Such adjuvants as: 1. Vaccines. 2. Foreign protein. 3. Chemicals. 4. Diathermic heat.

The use of chemicals has been recommended by many, and such substances as colloidal manganese, or dyes, as acriflavine, but I think they are more successful in the acute cases.

As a rare focus of gonorrhea may be mentioned the ureter. A case was shown by Friedman. His patient contracted gonorrhea in 1917, when 18 years of age, and in 1934, when he was 35, he still was suffering from gonorrhea. Cystoscopy showed

that the orifice of the left ureter had a stricture. Intravenous pyelography revealed a dilatation of the lower third of that ureter. A ureter catheter was introduced, and a large amount of pus evacuated, in which gonococci were abundant. Here the oral use of sulphanilamide should work wonderfully.

We should also mention the joints, which perhaps is outside the field of the urologist—whether there are cases of chronic arthritis caused by a primary infection of the joints with gonococci. Tommasi mentions a case of a wife in whom gonorrheal arthritis developed without evident local signs of infection of the genitals. The arthritis developed suddenly in several joints, and finally settled in the wrist joint.

One of the most difficult problems of chronic gonorrhea is to tell when a cure has been established. Cessation of the clinical signs alone is not sufficient evidence of cure. The patient may remain a gonococcus carrier. Therefore, on stopping treatment, one should take smears and cultures daily for one week. If negative the examination is repeated once weekly for four weeks, and then once each month for three months. After six months a complement fixation test is made.

We can safely say that a cure has been established if: 1. There is no sign of urethral discharge for at least two weeks after treatment has been suspended. 2. There is no pus in the morning urine. 3. There are no gonococci in smears and cultures of urethral and prostatic secretion. 4. There is no sign of inflammation seen by means of the urethroscope. 5. The negativity of findings holds for six months.

Acute Gonorrhea

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Due to the use of sulfanilamide the burden of acute gonorrhea has been greatly lightened during the past year. The question of the epidemiology and spread of the disease is still very important. The early amelioration of symptoms led to a caution by the original investigators that many new cases might develop. An effort was made to ascertain the incidence of new cases during the past three months as compared to the same three months a year ago. In our own experience there was a reduction of about 50 per cent. This might be due to several factors, such as the drug counter sale of sulfanilamide, perhaps the greater recognition of our competitors values, and the management of uncomplicated cases by family physicians. The comments of several competent urologists indicate that the incidence is greater, while others indicate that it is less. At the present time, the question of spread of the disease is a very paramount one. In my own opinion most physicians are cautiously watching their patients in this respect.

DIAGNOSIS

The diagnosis of active gonorrhea should not be made without confirmation by properly stained smears. In this connection, the use of the Gram stain is preferable. The typical Neisserian organisms, occurring in the urethral smears, are easily recognized, but the coffee-bean shaped, intracellular or extracellular diplococcus which is variable in its staining and has some tendency to pleomorphism, is more confusing. Such an organism, called a pseudo-gonococcus, has been described by Bolend[1]. The Gram negative diplobacillus (typical colon bacillus) should be very easily distinguished. These organisms seldom produce the characteristic purulent discharge.

A very confusing type of non-specific urethritis, presenting Gram positive lancet-shaped diplococci, has proven to be a very interesting problem in differential diagnosis so far as these discharges are concerned. The investigations of Moor and Brown[2], of the University of Oklahoma,

proved that this organism was a pneumococcus; in most instances type 14, and that it occurred in one-third of a series of 400 cases having non-specific, subacute, chronic, and active urethritis. It has been found as an associated organism in several cases of acute gonorrhea.

Control of the Patient

Just as important as the plan of treatment, is the problem of control of the patient. Patients presenting the symptoms of acute gonorrhea, whether their discharge be specific or non-specific are never in a receptive mood on the first or second visit. They should return often enough to realize the seriousness of the infection, and the possibility of its transference to the patient's eyes or to other individuals. He should be taught to eat properly, secure adequate bed rest, and to avoid active emotional stimulation. He should also be informed of the joint legal obligations of patient and doctor to the United States Public Health Service in connection with case transfer, case holding and tests for cure.

Symptoms and Pathology

It has been shown by many investigators that the gonorrheal organism has passed beyond the basement membrane and is beyond the reach of local antiseptics when the symptoms have developed. Aside from this fact there are anatomical conditions which influence the course of acute gonorrhea. A tight foreskin or partial lymphatic obstruction in the coronal sulcus area may produce annoying meatal edema. The presence of a small urethral meatus indicates in most instances the presence of excessive deep urethral crypts and sinuses along the entire penile urethra. Pelouze[3] calls attention to the variation in the structure of the posterior urethral mucosa as a cause for greater tendency to posterior extension. The redness and edema of the urethral membrane gives a clinical estimate of the severity of the anterior urethritis. Suggestive symptoms of frequency, tenesmus, and difficult urination, indicate the development of posterior urethritis. Examinations of the first and second urine specimens still have great value as an objective sign of posterior urethritis. The prostate and seminal vesicles should be examined only very gently and then just to determine their involvement. When acute, no effort should be made to secure the secretion.

Treatment

The development of non-irritating, mild, mercurial and silver protein instillations have eliminated the necessity for overstimulation and destruction of the urethral membrane. However, mechanical injury can easily result from rapidly forced injections, pressure of the syringe in the meatus and the application of firm pressure with the thumb and forefinger. For the most part anterior injections should be only mild rinses. It is the author's impression that the prostate should receive practically no treatment during the active phase of acute gonorrhea. This applies with equal emphasis to the posterior urethra unless acute retention of urine develops as a result of acute prostatitis, then careful catheterization with a small catheter as needed for relief of the retention is indicated. When the active stage has subsided mild tonic massages may be instituted for microscopic study. Mild irrigations should follow the massage. Sounds should be left for treatment of chronic gonorrhea.

The Kettering type of hypotherm conditioned air cabinet seemed to reduce the period of involvement and the severity of symptoms in acute gonorrhea to about 50 per cent. This procedure was discontinued because it required five to seven hours for each application, with expensive equipment, to which was added the expense of constant medical attention, the employment of male and female nurses, and expenditures for hospital beds, laundry and electricity. In other words, such fever therapy is an institutional procedure and few patients with acute gonorrhea will submit to either the treatment or the expense, especially since the advent of sulfanilamide therapy. Most every physician has used sulfanilamide, in the treatment of gonorrhea. A summary of the facts established is, therefore, all that is necessary.

The administration of 60 to 80 grains a day for two or three days, will result in the disappearance of the discharge and the clearance of the urine in 70 to 80 per cent of the cases. The drug should be continued if well tolerated. The most de-

sirable dosage seemed to be 10 grains every four hours, night and day. This dosage was considered most desirable as a result of the estimations of blood concentrations by Marshall, Eremson & Cutting[4]. They found that absorption from the intestinal tract was more than 99 per cent complete in four hours. The equilibrium between the amount ingested and the amount excreted in the urine was reached in two to three days and required about three days for elimination.

In cases with impaired renal function smaller doses raise the blood concentration and elimination requires a longer time. Practically the total amount of sulfanilamide taken by mouth can be recovered from the urine. Subcutaneous or intramuscular administration does not result in a higher blood concentration but excretion is slightly more rapid.

The water intake should not be limited. Normal water balance should certainly be maintained as an adequate concentration of the drug in the urine is easily obtained. Methods for determination of the free and conjugated sulfanilamide in the blood and urine are available to those using a colorimeter. Marshall, Emerson & Cutting[4].

The exact mode of action of sulfanilamide is not satisfactorily proven. The work of Helmholtz[5] and Farrell, Lyman and Youman[6] indicates that it is bacteriocidal in the urine. That this is not its only mode of action is evident. Blood plasma has a greater concentration of sulfanilamide than does whole blood and evidently acts as a very efficient media for destroying the deep gonococci. Osgood and Brounlee[7] suggest that sulfanilamide did not kill streptococci in bone marrow cultures directly, but permitted greater efficiency of phagocytic action. This explanation is not satisfactory for gonorrhea because decreased phagocytic action is present in cases responding to treatment.

It was unfortunate that great confusion resulted from fatalities occurring soon after the introduction of this excellent drug. Fortunately, the facilities and medical background existed and were placed into immediate action to accurately determine their cause, diethylene glyocol solvent[10].

The toxic manifestations may be divided into those associated with no important pathological changes and those with severe damage. Under the first group may be included such symptoms as headache, nervousness, mental confusion, nausea, anorexia, vertigo, weakness, precardial pain and abdominal discomfort. For the most part the drug need not be discontinued unless the symptoms are too severe to be tolerated but it is often wise to reduce the dosage, as a lower blood level will probably give adequate therapeutic results. Cyanosis may indicate either sulphemoglobinemia or methemoglobinemia. The spectroscope is required to differentiate these. Marshall and Walzl[8] have not found any change in the oxygen-carrying capacity of a number of cases.

Skin rash on exposed surfaces indicates the production of a photosensitizing influence of the skin in some cases. Urticarial or exfoliative lesions sometimes occur but disappear in 48 to 72 hours, after discontinuing the drug.

The most dangerous toxic manifestations, well described in the literature, are changes in the blood picture, either hemolytic anemia or agranulocytosis. For this reason repeated studies of the blood picture are advisable and the drug immediately discontinued if a drop in the count occurs. The injury does not seem to be to the bone marrow but rather to the circulating cells so that blood transfusions, if given early, have usually resulted in rapid recovery. In such instances great fluid intake serves to avoid acid hematin crystalization in the renal tubules and alkalization is advisable. Vest, Harrell and Colston[9].

Gonorrhea in the Female

Very little has been said about gonorrhea in the female, because we believe that the administration of sulfanilamide has about the same value in such cases as it does in the male. There are, however, more opportunities for the female to develop complications, due to her functional activities. She should have bed rest at the menstrual period, and only very careful nontraumatic local care.

Release of patients as cured should not be given under two and one-half to three months of repeated complete studies during which time the activities should be

guarded to avoid exposure to others. I know of no new criteria of cure and time has to form one element in arriving at this conclusion. Sounds and sexual intercourse are uncertain tests for cure. Alcohol or beer will usually stimulate activity but may invite the production of a chronic carrier. Alas! I do not even know that another course of sulfanilamide is a positive test.

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Necessity of Careful Eye Examinations*

D. M. K. THOMPSON
MUSKOGEE, OKLAHOMA

In the earlier days with primitive weapons there were wild beasts always waiting and hidden foes or savages ready to send an arrow or spear thrust and the ears and eyes were keen and sharp for preservation. These senses are just as essential today to cope with the wolves and foes of all kinds and the ever demand for speed, it is necessary that ones eyes should be kept keen and alert, not only for their protection but for the sake of other fellow men.

In this age of swift travel by plane and car we must be able in an instant to see clearly and accurately able to judge distance, not only speed, but with an active mind able to judge and act quickly and correctly. And, too, the machinery employed in all kinds of work while the hand must be skilled, yet the eye must be quicker and more accurate to help and guide the hand. So essential are good eyes that in practically all commercial enterprises a careful and accurate examination by a specialized physician is required and report is demanded before one will be employed, this for his own protection and of his fellow employees. In so doing the employer is many times saved compensation and law suits for injury and even those old in a service, who have rendered good and satisfactory service, have been dropped because of some physical defect.

*Read before the Section on Eye, Ear, Nose and Throat, Annual Meeting, Oklahoma State Medical Association, Muskogee, Oklahoma, May 10, 1938.

I will not undertake here to describe the various kinds of opthalmoscopes. Many advances in the styles and forms of these essential instruments with monocular, binoculars and many other varieties of suggestions and attachments, the red free attachments and the mechanisms for photographing and drawing to measure distances and heights of the different changes taking place, the location and depth of opacities and a knowledge of kind and causes.

These more pretentious, expensive and electrically equipped machines, so handy and conveniently hooked up that the indirect method is not being used so much, although the image is reversed, yet we are given thus a very clear field and much magnified one and thus will reveal many points overlooked by the direct method and can be used to better advantage where pupil is contracted. So, in many ways, the better study can be made as in high myopia.

A normal fundus and medea we all try to recognize which ordinarily is not difficult to do, barring the anomalies of development, but when we have the patient coming apparently with symptoms pointing to some eye affection then with these means at our hands, we should, by making a careful examination, obtain a very perfect idea of existing changes, if any, not only the external eye structure and muscu-

lar inbalance the fields of vision and eye grounds for any anomalies of the vessels of the central artery, the retina, the choroid, lense, and change of vitreous.

Many of the patients come to you, referred by their physician, who wishes you to assist him in diagnosis and treatment of some obscure headache, neuritis and suspected brain lesion or some physical defect which may or may not be giving eye symptoms or any diminution of vision. By obtaining the history of the case, field of vision for white, for colors, blue, red and green, and careful fundus examination. Unfortunately many of these cases have been carelessly allowed to go to some ten cent store, drug store, or to some man who just fits glasses who knows nothing of the physiology or anatomy of the eye and what these symptoms mean and future bearing, not only on his vision or the delay in the necessary early treatment may mean the life of the individual when so much precious time may have been lost which, by a careful examination by a graduate of medicine who has specialized in the examination and treatment of eye diseases, and is able to diagnose systemic conditions with its relation to the eye.

The optic nerves come off as an elongated portion of the white matter of the brain, covered with the dura arachnoid and pia—being divided by spaces known as sub dural and arachuordal spaces, thus the spinal fluid circulates through this nerve, similarly to brain with the pia carrying many bundles of nerves so that we find a diseased condition or pressure acting on the brain will sooner or later, usually sooner, be shown on the eye grounds. We may have a hyperemia, a congestion involving the disc and smaller vessels, due usually to some local infection or irritation. This usually clears up after removal of the local condition.

Optic neuritis or papillitis, causing changes in the nerve head as to size, color and outline of nerve head, caused by severe and very deep pains, usually affecting vision quickly, taking its toll according to severity, location and cause, always a symptom of some general disease or affection, frequently produced by brain lesions, meningitis, acute or chronic syphilis, usually secondary, are the more common chronic affections.

The acute infections may be brought about in many ways by febrile conditions of infectious diseases and their sequelae—in fact most any febrile disease may produce it. So, being a symptom, the offending cause may be found and treated, blood tests must be made, pus pockets, tonsils, teeth and sinuses, if possible found and eliminated, kidneys and urine checked.

Poisons, such as lead, arsenic, methyl alcohol, quinine and many other drugs affect the nerves and may bring about primary atrophy.

Pressure from tumors of the orbit and optic nerve may produce optic neuritis by pressure and blocking the spaces. Tumors of the brain, the pituitary body and other parts from pressure on the nerve fibers will cause an optic neuritis and result in an optic atrophy and blindness, depending upon location and amount of pressure.

Tumors of the choroid, most usually to be considered malignant, the sarcoma is the more common, and in this connection wish to relate one experience which came my way. Mr. Mac brought his wife, age about 60, for eye examination and for glasses, giving a history of flashes of light, like lightning at times, careful fundus examination revealed a very small tumor posteriorly, advised enucleation as my opinion, asking consultation, the husband expressed a desire to take her to St. Louis, needless to say, they agreed with me and removed the eye, giving her only three years to live, vision was best in the affected eye. After 18 years she is living, in good health. Early diagnosis accounts for the prolonged life. I found the day before coming to me she had been examined by one of the best regarded specialists in Kansas City and told she needed her glasses changed only.

Detachment of the retina, giving a blurred image of blind spots in the beginning, should be early recognized if any good results from treatment is expected.

Opacities of the vitreous brought about by changes in the circulation system, hemorrhages and cause an amount of loss of vision proportionately due to the character of the density of such opacity. These may be seen by the examiner but may be remnants of embryonic life.

Injuries involving the optic nerve and

all or any part of the system leaves its mark and loss of function as to location and the severity of the injury, so frequently these penetrating injuries cause infections and suppuration. Naturally all penetrating wounds must be regarded as serious and the proper amount of care taken with early advise of removing the injured eye to avoid sympathetic ophthalmia if indicated. It behooves us to make a careful examination of any eye, even though so trivially injured, apparently as now since we have a corporation commission there are those claiming not only previous scars and diseases to have been recent so that we are called in court to be placed on the spot by these attorneys pro or con and even a small bruise may cause later a detachment of the retina as I have found from experience, after the case has been settled, patient apparently having no loss of vision for months afterward.

After this preamble I will endeavor to bring this paper up to date. In this day of mechanical devices doing so much of our work it is necessary that the eye be in as nearly perfect condition as possible. And to go a step farther there is the automobile, a necessity, trucks and cars going every where, moving rapidly so that any latent hyperopia or muscular unbalance must be corrected to avoid the strain and tired feeling produced by the long tedious drives, which in a flash, may cause a disastrous wreck and it should be only a short time until no driver will be permitted on the highway who does not have sufficient and stabilized vision for the safety of himself and others.

Examination of eyes for aviation has become increasingly important since flying has become more universal. Most nations have enormous air corps and since the speed of the airplane is now at the rate of 300 feet per second, in military operations, quick and accurate eye sight is equally as important as in private or commercial flying from the standpoint of making safe take offs, landings, and in formation flying. In combat the "speck on the sun," as stated by one war ace may prove to be an enemy airplane necessitating a fight within the next few minutes.

Military operations may succeed or fail from no other cause than improper knowledge of terrain due to poor observation or inability to take proper pictures. Of course, in bombing quick and accurate eye sight is always very important.

In every day life the necessity for quick and accurate eye sight is especially important to all when you consider the rapid transportation by autos and airplanes and the careless driving which is seen daily on the highways.

While the exceptional pilot is sometimes found who can fly with one poor eye or with poor muscular balance, as for instance, Wiley Post, who never could receive a Department of Commerce license because of visual defect. Also a famous war ace who flies with one eye has a handicap in case of an accident to that eye.

Early in the World War, because air pilots were so few, the British army investigated the cause of many accidents and found that out of 100 crashes 90 were due to defective pilots, two to the enemy and eight to mechanical defects. After organizing a medical examining corps and elimination of epileptics, blind and mentally and physically inadept men from flying this mortality was cut to only 32 per 100 in the first year. Out of some million of military flyers in the United States air service in recent years there has only been one accident due to physical or mental defects of the pilot.

When the United States entered the war we had a medical aviation school of Eastern Specialists who, through extensive study of the pilots, both good and bad, devised the physical examination for aviators called 609. This has been largely used by practically every civilized nation in the world with very little change.

(Wilmer, Ike Jones, Col. Lester, Dr. Snyder, who worked out the physical defects of the air to know how the high and low altitudes affect the eyes.)

Limiting ourselves to the discussion of the eye the examination becomes important to eliminate all disease and major as well as minor defects. The examination goes further in search for latent tendencies which, under stress, strain and fatigue, will become aggravated and may be the cause of an accident. As, for instance, a man with apparent normal distance vision cannot receive a license in the army if he has normal muscular balance but is found

under the prism test to have weak muscles which, under fatigue, may develop into diplopia which is a common cause of crashes in making landings. Eye fatigue in recent years has become one of the important subjects of research for the air license because the pilot flying at 250 to 300 miles per hour has to be constantly on the alert for other people, for emergency landing fields, and has to be able to see clearly and quickly as many as 85 instruments or dials on his instrument panels. All applicants are examined under complete mydriatic to bring out all latent defects.

Since it is to the advantage of the air forces in time of war and to the commercial licensed pilot in time of peace to fly at a high altitude because of cross currents the effect on the pilot, his eye fatigue and general nervous instability, has become increasingly important.

Eye and nerve changes will develop more rapidly under low oxygen at high altitude if the pilot is in any stage of fatigue or acidosis, or fatigue before starting. This exposure to the low oxygen accounts for an accident to pilots who have flown over the same course many times previously.

Muscular balance, depth perception or distance judgment is a necessity in all and any kind of flying.

It is very evident that the diseased eye or one with poor vision is a definite handicap to flying. This has been recognized by many states which require acute vision tests and good vision before issuing a driver's license for automobiles.

The stress and strain of flying, especially at low oxygen, in the high altitude on the normal eye is very difficult to overcome and practically impossible for one having diseased or weakened eyes of any kind.

In conclusion the necessity of eye examinations by the use of the opthalmoscope is recognized as a means of diagnosing by every recognized school of today. All students are required to become familiar with its use and now you will see the surgeon obstetrician, neurologist, general medicine and urologist examining for eye changes, looking for disease and changes which may be produced by certain drugs, such as arsenic, quinine or diseases of pregnancy, kidney troubles, tuberculosis, syphilis and the different variety of interocular tumors and pressures of tumors of the brain, systemic diseases and disturbance of the circulatory system, auto intoxication, drug poisonings and nervous symptoms, headaches, irritable stomach and system should be eliminated or proven by a careful eye examination. No eye should ever be tested for lenses without an opthalmoscopic examination.

Typhoid Pyelonephritis, Renal Typhoid Fever

Hobart A. Reimann, Philadelphia (Journal A. M. A., Aug. 20, 1938), cites a case of typhoid pyelonephritis presenting systemic symptoms and signs of typhoid lasting 47 days; the clinical features were remarkable in that no symptoms referable to the intestinal tract were observed. The main interest centered about the typhoid state with threatened uremia and evidence of retention of metabolites, typhoid bacilluria, pyuria, hematuria and pain in the right lumbar region, which were present as early as the eighth day of illness. The patient recovered, but pyuria, bacilluria and hematuria persisted. Typhoid bacilli disappeared from the urine after the administration of mandelic acid. Evidence of active renal disease ten months after the acute attack supports the growing mass of evidence that renal infections, particularly in childhood, must be looked on as a cause of subsequent kidney disease. Whether chronic nephritis and hypertension will eventually develop in this case can be determined only by future examination. It is important to establish etiologic diagnosis promptly in all cases of acute or chronic pyelonephritis, since there is no doubt that patients like the one described may serve as a dangerous source of infection to others if proper precautions are not taken to sterilize the urine before its disposal.

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Failure to receive The Journal should call for immediate notification of the Editor, McAlester Clinic, McAlester, Oklahoma.

Local news of possible interest to the medical profession, notes on removals, changes of addresses, births, deaths and weddings will be gratefully received.

Advertising of articles, drugs or compounds unapproved by the Council on Pharmacy of the A. M. A., will not be accepted.

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EDITORIAL

BEWARE OF FALSE GODS!*

AN EDITORIAL FROM THE KANSAS CITY MEDICAL JOURNAL, AUGUST, 1938

If you are not familiar with the impending investigation of the A.M.A. at Washington, it is just that you have not read the recent issues of your own J.A.M.A. or you have not picked up the papers from the front lawn. The build-up of the government to dissipate and dilute the influence of the A.M.A. is showing progress in all directions. Members who have never participated in the organization and progress of the medical profession have been uncovered and minority groupings in different thought channels have been encouraged to display their antipathy. The barrage has been amplified by attacks from different bureaus and departments of the government. The scare and the threat of the law and the grand jury has not been overlooked.

The unfortunate part about the present situation is that while all of these attacks have some small elements of fact, when combined they tend to obscure the great values for the good of the whole people which organization in the profession has established. Enough wolves nipping at the heels and annoying a strong man will wear down any enthusiasm for existence.

One may declare a vacation for tradition for a period of time. One may wink at ethics for another period. One may argue that public policy demands a cessation of standards. Some may insist that it is not necessary to balance the science and the art of medicine. There is no doubt but that you can tear down the structure of better and honest medicine in America if the fitness of change in the house of medicine is not judged by the profession itself. It is notorious that laymen are not able to choose medical attention or rather health attention by any measure of their judgment.

Only as the medical profession, through organized medicine and the A.M.A., has erected standards of medical education, eliminated quackery, qualified specialists and criticized hospital methods, etc., has the quality of medical practice of America developed. There has never been any police power to the A.M.A. There have never been any laws conferring any measure of penalty or legal action by the A.M.A. There has never been any big boss such as other groupings in business and sports have devised.

All of the progress of American medicine has been through the better education of physicians, through the moral persuasion of the Councils of the A.M.A. and through the traditional application of ethical standards. Such means are bound always to have more weight than mere laws. Public opinion has supported these various items of progress and gradually the quackery and charlatanism of America has faded into disrepute.

*From the Journal of the American Medical Association, August 20, 1938, Vol. III, No. 8.

Medical schools with their huge establishments may feel that they are peculiarly fitted to practice mass medicines with governmental subsidies. Large non-profit metropolitan and even smaller hospitals may feel that they are ordained through the merit of their physical establishments to be the center for medical and health needs of their communities.

These modern factors of civilization and progress are prone to forget that it is really the personality and peerage of their medical staff that establishes their fame and their clientele. It is now apparent that even the physicians who staff such institutions sometimes arrogate to themselves an unusual ability to serve the people. Physicians in groups promptly believe that in their small union rests the local tenens of Aesculapian lore.

All these things may be true. But one must realize that only a small minority of all the people can take advantage of such institutions and such groupings. The great majority of people scattered over the country must be taken care of by the physicians of their locality. The quality of such medical care can only be maintained by supporting the progressive type of physician who keep up with the times and who does not indulge in unethical methods or tamper with traditional items of good medical manners. It is further maintained by a better distribution of well educated physicians.

These factors of medical progress are maintained by the inherent good will and the promotion of better standards by the Councils of the A.M.A. and other national medical organizations. If you dissipate the influence behind these standards, you are cutting out the foundations that are responsible for better medicine for all the people in America. One should not listen to the sirens who will cheer on those who are willing to scuttle the ship. Hold fast to those things that are good! Beware of false gods!

—E. H. S.

HELPFUL POSTGRADUATE COURSES

Reports from the field on the Post-Graduate Program in Obstetrics are that the second circuit was completed in southeastern Oklahoma Friday night, August 26. The centers of this circuit were Poteau, McAlester, Durant, Hugo, and Idabel. Seventy-seven physicians in the southeastern counties registered and completed the course. The number of practicing physicians in some of these counties is sparse, and we consider this a record enrollment.

In addition to the practical instruction being given by Dr. Edward N. Smith, the Instructor, doctors are reporting that the private consultations are, from a teaching angle, some of the most valuable helps they have received in any form of post-graduate study. Many state they regret seeing the course closed, and wish that it could go on indefinitely.

The next circuit will be confined to the mideastern section of the state, and will include Tulsa, Muskogee, Okmulgee, Shawnee, and Ada. The instruction will open in early September in these centers. The Course lasts ten weeks, and the fee is only $5.00. This is the most economical post-graduate study that doctors of Oklahoma will probably ever receive. Doctors may correspond or enroll in advance for the course, and the Committee solicits your co-operation.

All correspondonce should be addressed to Dr. Henry H. Turner, Chairman, Committee on Post-Graduate Medical Teaching, 304 Osler Building, Oklahoma City.

INVESTIGATE BEFORE YOU BUY

Apparently the doctors of Oklahoma are being swindled by a concern known as the Underwriters Service Bureau of Philadelphia. They have been investigated by the Merchants Protective Credit Association of Elk City, Oklahoma, and by reading the following telegrams you will be informed as to this swindle.

Better Business Bureau, Philadelphia Penn.: Can you recommend Underwriters Service Bureau Morris Building Philadelphia selling doctors listing service for twenty-five dollars as reliable? Telegraph immediately collect. Merchants Protective Credit Association, Elk City, Oklahoma.

Merchants Protective Credit Association, Elk City, Okla.: Have received many complaints against Underwriters Service Bureau. Understand they have recently moved without leaving forwarding address. The Better Business Bureau of Philadelphia, Inc.

HOUSE OF DELEGATES

A special meeting of the House of Delegates of the American Medical Association has been called to meet in Chicago at 10

a.m., September 16, 1938. The official call states the business to be transacted at this special session will be limited to consideration of the medical health problems submitted to the National Health Conference recently held in Washington and to such other matters as may be submitted to the House of Delegates by the Board of Trustees.

This will be a very important meeting and the membership of our State Association will be advised as to these transactions as soon as possible.

COUNTY POSTGRADUATE COURSES IN VENEREAL DISEASE

The Oklahoma State Health Department announces through Chas. M. Pearce, M.D., Commissioner of Health, that postgraduate courses in venereal disease will start Monday, October 3, in Rogers county, running every Monday through the month. Courses in Osage county start Tuesday, October 4, running every Tuesday up to November 1. Courses in Washington county start October 5, running every Wednesday through November 2. Courses in Craig county start October 6, running through every Thursday until November 3.

Lectures will be held in Rogers county at Claremore, Craig county at Vinita, Washington county at Bartlesville, Ottawa county at Miami, Osage county at Pawhuska. These courses will be given without cost to the physicians and will be conducted by Dr. David V. Hudson.

Under the LaFollette-Bulwinkle Bill each State receives its pro rata share of funds for venereal disease control according to population. A certain amount of these funds is to be spent for educational purposes; therefore, our setup consists of one consultant, Dr. David V. Hudson; one director, Dr. Vance F. Morgan; two epidemiologists, Dr. Louis Dakil, (one to be named); two publicity men, William Riddle and Jack Muller.

These courses will be given until the entire state is covered. The president and secretary of each county medical society will be notified in advance as to when lectures will be held and will be contacted by one of the men in this setup some several weeks before the course begins. These courses are limited to M.D.'s only.

As in the past, arsenicals will be furnished to all ethical practicing physicians in the state of Oklahoma for the care of indigent patients on requisition through the local county health superintendent. Indigent patients are classed as to the amount that can be paid by such patients. We want every physician to get what he can out of the patient for treatment, but we consider that a patient who can pay more than $1.00 for a treatment should not be classed as indigent.

LEGAL DEFINITION OF "DOCTOR"

The following is a copy of a letter from the State Board of Medical Examiners written by the Attorney General of the State of Oklahoma, giving his opinion relative to the law concerning the "Indian Herb Doctor," or any "herb doctor" or doctor who administers simple remedies. This opinion is published in full for your information and should it be applicable to anyone in your County you may know now how to proceed.

Dr. J. D. Osborn, Jr., Secretary
State Board of Medical Examiners
Frederick, Oklahoma.

Dear Sir:

The Attorney General acknowledges receipt of your letter dated August 10, 1938, wherein you ask:

1. If a person, commonly referred to as an "Indian herb doctor" or an "herb doctor" or a "doctor who administers simple remedies" who has never been licensed under the laws of this State to practice any branch of the healing art but who has been registered by the Basic Science Board under the last proviso of Section 19, Article 28, Chapter 24, Oklahoma Session Laws, 1936-37 (commonly called the Basic Science Law) has the right to treat disease, injury, or deformity of person by drugs of any kind, whether derived from herbs or otherwise, *for compensation?*

2. Would the Attorney General's answer to the above question be the same in the event said person makes no specific charge for his services but does charge for the medicine prescribed and furnished by him?

In reply to your *first question*, you are advised that the material part of Section 4635, Oklahoma Statutes 1931, (same being

a part of Chapter 59, Oklahoma Session Laws 1923) is as follows:

"Every person shall be regarded as practicing medicine within the meaning and provisions of this Act, who shall append to his name the letters 'M.D.,' 'Doctor,' 'Professor,' 'Specialist,' 'Physician,' or any other title, letters or designation which represent that such person is a physician, or *who shall for a fee or compensation treat disease, injujry or deformity of persons by any drugs,* surgery, manual or mechanical treatment *whatsoever."*

Section 4634, Oklahoma Statutes 1931, is in part as follows:

> "Every person before practicing medicine and surgery or any of the branches or departments of such, within the meaning of this Act, (meaning as defined in Section 4635, supra) within the State of Oklahoma, must be in legal possession of the unrevoked license or certificate herein provided for, and any person so practicing in such manner within this State, who is not in such legal possession thereof, shall be guilty of a misdemeanor, and shall, upon conviction thereof, in any court having jurisdiction, be fined for the first offense in any sum not less than One Hundred ($100.00) Dollars, and not more than Five Hundred ($500.00) Dollars, . . ."

In the case of Reeves v. State, 36 Okla. Cr. 186, 253 Pac. 510, the fourth paragraph of the syllabus is as follows:

> "Section 12, c. 59, Session Laws 1923, which provides that every person shall be regarded as practicing medicine within the meaning and provision of that act who shall append to his name the letters, 'M.D.,' 'Doctor,' 'Professor,' 'Specialist,' 'Physician,' or any other title, letters, or designation which represent that such person is a physician, is an expression of the legislative intent, broadening the meaning of the words, 'Practicing Medicine.' The acts forbidden, in a substantial sense, amount to a practice of medicine or an assuming to practice medicine. Such section is not invalid as creating a conclusive presumption or an unreasonable prima facie presumption."

In the case of Needham et al. v. State, 55 Okla. Cr. 430, 32 Pac. (2d) 92, it was held that when an unlicensed person assisted a licensed physician in treating diseases for compensation, both violated Sections 4634 and 4635, supra.

In the case of Holt v. State, 51 Okla. Cr. 263, 300 Pac. 430, the Criminal Court of Appeals held that the evidence in said case was sufficient to sustain conviction for practicing medicine without a license or certificate from the State Board of Medical Examiners. In this connection it should be noted that said evidence was summarized by the court as follows:

> "The evidence of the state was that the defendant represented himself as superintendent of an institution known and designated as 'Utilitarian Vitality Unity, A Mutual Cooperative Health Society'; that he issued numerous advertisements of this institution, one of which was received by the prosecuting witness, Mrs. Mitchell; that she entered into a contract with the defendant, and paid him $100 cash, and took the treatments given her by defendant; that *defendant charged the prosecuting witness for medicine;* and that defendant possessed no license to practice medicine."

By an examination of the Basic Science Law, supra, referred to by you, it will be found that the purpose thereof is to require applicants for examination before the examining boards of the various branches of the healing art, to *first* take and pass an examination in the basic sciences before the Basic Science Board. After the applicant passes said preliminary examination he is given by said board "a certificate of ability" in the basic sciences, which, *if he is otherwise qualified,* when presented to the examining board of the branch of the healing art in which the applicant desires to obtain a license, will entitle him to be examined by said board, and, upon his successfully passing the examination thereof, to be issued a license to practice said branch of the healing art, thereby.

Section 19 of said Basic Science Law, after making certain exceptions to the provisions of said law not material here, states:

> "It is expressly provided that the provisions of this Act shall not apply to Indian Herb Doctors, Herb Doctors or Doctors who administer simple

> remedies who register with this Board within sixty (60) days after the passage of this Act and who have practiced in Oklahoma for two (2) years."

Under the above proviso, what is designated as an Indian herb doctor, an herb doctor, or a doctor who administers simple remedies and who has practiced as such in Oklahoma for at least two years, if he registers with the Basic Science Board within 60 days after the passage of the Basic Science Law, is made eligible, *if he is otherwise qualified*, to take an examination befor the examining board of any branch of the healing art (such as Medicine and Surgery, Chiropractice, and Osteopathy), without first securing a certificate of ability from the Basic Science Board. This is the only effect of said proviso.

It is therefore the opinion of the Attorney General that under the facts set forth in your first question a person such as is mentioned by you *does not now and never has had the right* to treat disease, injury or deformity by drugs of any kind, whether derived from herbs or otherwise, for compensation.

In answer to your *second question*, you are advised that in an opinion dated October 15, 1932, addressed to the Hon. Hiram A. Butler, County Attorney, Boise City, Oklahoma, the Attorney General held that a person is practicing medicine for compensation if he receives remuneration for his services "consisting of free-will offerings," and cited in support of said holding the case of Singh v. State, (Texas) 146 S. W. 891, the thirteenth paragraph of the syllabus thereof being as follows:

> "Under Acts 30th Leg. c. 123, prohibiting any person from practicing medicine for compensation received, directly or indirectly, without a license, proof that defendant did not charge for his services directly, but told all who applied for treatment that he would receive from them 'free-will offerings,' and that he actually did receive pay from patients, was sufficient to show that he practiced medicine for compensation."

In the case of Harris v. State, 41 Okla. Cr. 221, 271 Pac. 263, it is stated:

> "The prosecution is under the Medical Practice Art (chapter 59, Session Laws 1923). The information charges that defendant, without having a license or certificate to practice medicine and surgery, did treat and prescribe as physician and surgeon to Velma Weidman, and for compensation, certain drugs for an alleged tumor. . . .
>
> "In enacting this law, the Legislature evidently intended to prevent persons not properly educated in the science of medicine and not properly licensed from acting or assuming to act as a physician or surgeon and to protect the public from quacks, humbugs, and charlatans who so often prey upon the public, pretending to have marvelous remedies or pretending to cure incurable diseases.
>
> "By cross-examination defendant sought to show that the charge of $125 was for the preparation of 'oil of radium' only; that defendant made no charge for any advice or examination. He argues that it is no violation of law for any person to sell medicine in his home, and that the evidence does not sustain the charge. This contention cannot be sustained. It is evident that the physical examination, the pretended diagnosis, and the imposing on the credulity of the patient by the sale of a worthless preparation for $125 constitutes but a single transaction, and while it is probably true that at the time defendant informed his patient he was charging the $125 for the two bottles of drugs and not for the examination and diagnosis, this does not alter the situation. The entire transaction is a practice of medicine within the definition of the Medical Practice Act. The fact that defendant informed his patient at the time that this charge was for the pretended medicine is plainly but a subterfuge to avoid the provisions of the law."

In the case of Tucker et al. v. Williamson et al., 229 Fed. 201, the third paragraph of the syllabus is as follows:

> "Under Gen. Code Ohio, 1286, a person who examines patients, diagnoses their diseases, and then prescribes and sells his own proprietary remedies is engaged in the practice of medicine, although his ostensible and apparent motive may be the sale of his medi-

cines, and he is subject to the laws of the state regulating such practice."

Attention is called to the following cases which are in harmony with the cases last above cited, to-wit, State v. Van Doren (N. C.), 14 S. E. 32; Underwood v. Scott (Kansas), 23 Pac. 942, and Katsafaros v. Agathakas (Ohio), 3 N. E. (2d) 810.

Therefore, in answer to your second question, you are advised that under the authorities above set forth the Attorney General is of the opinion that the mere fact the person mentioned by you makes no specific charge for his services, but does charge for the medicine prescribed and furnished by him, does not prevent him from unlawfully practicing medicine for compensation within the meaning of Section 4643 and 4635, Oklahoma Statutes 1931. Your second question is, therefore, answered in the negative. You will also note from the Reeves case, supra, that if said person appends to his name the word "Doctor," such fact also constitutes a violation of said sections. Furthermore, if the person mentioned by you is not registered and licensed under the provisions of Sections 4696 and 4697, Oklahoma Statutes 1931, relating to the practice of pharmacy, he is subject to the penalties provided in the pharmacy law.

Yours very truly,
FOR THE ATTORNEY GENERAL
FRED HANSEN,
Assistant Attorney General.

Approved in Conference 8-17-38.

Editorial Notes—Personal and General

DR. AND MRS. JOHN S. PINE, Oklahoma City, have returned from Havana, Cuba, to Florida and will spend some time motoring there and in other southern states.

DR. AND MRS. JOSEPH W. KELSO have returned from Corydon, Iowa, where they visited Dr. Kelso's family.

DR. GERALD ROGERS, Oklahoma City, announces the removal of his office from 404 to 328 Osler Building. His practice is limited to obstetrics and gynecology.

DR. AND MRS. ALLEN R. RUSSELL, McAlester, and daughter, Betty Sue, spent two weeks in August in Little Rock, Hot Springs and Memphis.

DR. AND MRS. P. K. GRAENING and children, Oklahoma City, have moved to Waverly, Iowa, where they will establish their home.

DRS. E. H. SHULLER and L. S. WILLOUR and their families, McAlester, spent a week in August at Roarin' River, Mo.

County Health Superintendent Appointments

Dr. James O. Hood, Norman, Cleveland County.

Dr. F. S. Hassler, Muskogee, Muskogee County.

Dr. Hood fills the place with the City-County Health Unit which was resigned by Dr. Guy H. Williams. Dr. Hassler was appointed director of the full-time City-County Health Unit which was organized July 1, 1938.

International Assembly

The twenty-third International Assembly of the Inter-State Postgraduate Medical Association of North America will be held in the public auditorium of Philadelphia, Pennsylvania, October 31, November 1, 2, 3 and 4, 1938. All scientific and clinical sessions will take place in the auditorium. Hotel headquarters will be the Benjamin Franklin Hotel.

The members of the medical profession of Philadelphia are correlating for the clinics, an abundance of hospital material representing various types of pathological conditions which will be discussed by the contributors to the program.

In the neighborhood of 80 distinguished teachers and clinicians will appear on the program, a tentative list of which may be found on page XIII of the advertising section of this Journal. The subjects and speakers have been selected to consider practically all the subjects of greatest interest to the medical profession in general.

A full program of scientific and clinical sessions will take place every day and evening of the Assembly starting each morning at 8 o'clock. On account of the fullness of the program, restaurant service will be available at the auditorium at moderate prices.

The members of the profession are urged to bring their ladies with them as a very excellent program is being arranged for their benefit by the ladies' committee. Philadelphia has many places of historic and other interests, which will make this year's program especially attractive to them.

Pre-assembly and post-assembly clinics will be held in the Philadelphia Hospitals on Saturday, October 29, and Saturday, November 5.

It is very important that you make your hotel reservations early by writing Mr. Thomas E. Willis, Chairman of the Hotel Committee, Chamber of Commerce Building, 12th and Walnut streets, Philadelphia, Pa.

The Association, through its officers and members of the program committee, extend a very hearty invitation to all members of the profession in good standing in their State and Provincial Societies to attend the Assembly. The registration fee is $5.00.

Dr. Elliott P. Joslin, President, Boston, Mass.
Dr. George W. Crile, Chairman Program Committee, Cleveland, Ohio.
Dr. William B. Peck, Managing-Director, Freeport, Illinois.

ADDITIONS TO ROSTER

Johnston County
CLARK, GUY L. ..... Milburn

LeFlore County
BEVILLE, S. D. ..... Poteau
LOWRY, R. W. ..... Poteau
ROLLE, NEESON ..... Poteau

Logan County
MEAD, W. W. ..... Guthrie

Kay County
YEARY, G. H. ..... Newkirk

Okfuskee County
BLOSS, JR., CLAUDE M. ..... Okemah

Payne County
WRIGHT, J. M. ..... Stillwater

OBITUARIES

DOCTOR FRANCIS BARTOW FITE

Dr. F. B. Fite, Muskogee, died at his home, August 13, 1938, after a long illness.

He was the second in three generations of physicians, coming to Indian Territory as a young man and almost alone sponsoring growth of the medical profession in this vast wilderness. He was founder of the first hospital in Muskogee; one of the founders of the Indian Territory Medical Association, being president in 1893.

Dr. Fite was born near Cartersville, Bartow County, Georgia, October 17, 1861. His father was Dr. Henderson W. Fite, who served as surgeon of the 40th Georgia regiment, Confederate army, during the Civil War. Dr. Fite's early education was received in the public and private schools near his boyhood home. He later entered Pine Log Academy at Pine Log, Georgia. At the age of 19 he began the study of medicine with his brother, Dr. R. L. Fite, and his half-brother, Dr. J. A. Thompson, at Tahlequah. In 1884 he returned to Georgia and entered the Southern Medical College at Atlanta. This institution is now Emory Medical College. He graduated in 1886 with high honors, receiving the class medal. In 1886 he returned to Tahlequah where he first began practicing with his brother, Dr. R. L. Fite, but in 1888 he went to New York where he took extensive post graduate work.

On November 1, 1889, he established his office in Muskogee, and in 1893, he formed a partnership with Dr. J. D. Blakemore and the late Claude A. Thompson.

The Fite Clinic was established in 1923 with his son, Dr. W. Pat Fite. Later another son, Halsell, joined the organization.

Dr. Fite was a member of the International Association of Railroad Surgeons; the Oklahoma State Medical Association; the American Medical Association; North Texas Medical Association and a Fellow of the American College of Surgeons. He was a member of the First Methodist Episcopal Church, South, and a charter member of St. Paul's M.E.S. Church. He was also a member of Muskogee Commandery of the Knights Templar; Independent Order of Odd Fellows, and the Benevolent and Protective Order of Elks.

Dr. Fite is survived by the widow, four sons, Drs. Wm. P. and Halsell Fite; Julian Fite, an attorney, all of Muskogee; Francis Bartow Fite, Jr., an attorney of Seattle, Washington, and a daughter, Mrs. Frances Fite Ambrister.

Funeral services were held at St. Paul's Methodist Church, with Dr. L. S. Barton officiating. Interment in Greenhill Cemetery.

This ends the career of one of the pioneer practitioners of Indian Territory, a man who has done much for his profession and the people of his state.

DOCTOR WALTER N. JOHN

Dr. W. N. John, born at Galveston, Texas, May 18, 1871, died August 15, 1938, following a long illness.

His early education was received at Nashville, Tenn., completing his high school education in that city. He then entered Texas University, graduating from the medical department, May 1, 1894. The following year he spent as an interne at the John Seely Hospital, Galveston, and in October, 1894, he located at Nelson, Indian Territory, as physician to the Choctaw School Spencer Academy. When this school burned, in 1897, he remained at Nelson, doing private practice until 1902, moving to Antlers Jack Fort, now in Pushmataha County. In 1908 he moved to Hugo and became County Health officer and surgeon for the Frisco railroad.

Dr. John was a Royal Arch Mason, an Odd Fellow, a Pretorian and a Maccabee; a member of the Woodmen of the World and Modern Woodmen of America, and charter member of the Hugo Lions Club. He was a member of his County Medical Society, the State and National Medical Associations.

Dr. John is survived by his widow and four daughters.

Interment was in Mount Olivet Cemetery, Hugo.

DOCTOR FREDRICK L. SMITH

Dr. F. L. Smith, pioneer physician of McIntosh County, died August 22, 1938, at his home in Eufaula. He was born in Florida in 1867 and came to Oklahoma long before statehood. For many years he resided at Fame, a small town west of Eufaula, but was a resident of Eufaula for the past seven years. He was a member of the City Council and Eufaula Masonic Lodge No. 1. He was a member of his County, State and National Medical organizations.

Dr. Smith is survived by his widow and one son and daughter. Interment was in the Eufaula Cemetery.

Ruch, Walter A.: Analgesia During the First Stage of Labor. Am. J. of Obst. & Gyn., 35:830-834, (May) 1938.

In this series of 755 obstetric cases, Ruch has reported on the effects of a combination of Dilaudid 1/32 grain and scopolamine 1/130 grain used for first stage analgesia. Also, an analysis was made of the possible effect of ethylene, nitrous oxide, ether and other drugs used for second stage anesthesia on the condition of the baby.

By far, most of the mothers obtained good analgesia from the Dilaudid-scopolamine combination. Apnoea in the infants was of no great consequence in most cases, as they responded to minor resuscitation procedures, such as rubbing of the back, thumping of the feet, and began to breathe very quickly after mucous had been removed from the throat. The incidence of asphyxia was slightly greater when ether was used for second stage anesthesia. The only cases of deep asphyxia (three in all) which occurred followed the use of the latter anesthetic. There were three stillborn babies, one of which had an intracranial hemorrhage following a rapid second stage in a multipara; the other two were stillborn as a result of a prolonged period of "molding" in primiparae.

Several of the babies were X-rayed on the second day of life to determine whether or not they had an enlarged thymus gland. Some of these mothers had entered the hospital too late for semi-narcosis, but others were included in the series. In the 378 cases examined by X-ray, it is found that atelectasis was present in 24 of the babies, but only one of the babies showed any active symptoms. The lungs were completely expanded at the end of three to five days in all except four or five babies. Several of the babies who showed slight atelectasis in the X-ray picture from mothers who had no semi-narcosis during the first stage.

Ruch concludes his report: "In a series of 755 cases, 1/32 grain of Dilaudid and 1/130 grain of scopolamine proved to be a satisfactory combination for the production of semi-narcosis during the first stage of labor, providing a pleasing analgesia for the mother with little, if any, effect on the baby. In some cases a small dose of one of the barbiturates was administered in conjunction with Dilaudid-scopolamine analgesia. When ethylene or nitrous oxide was used for anesthesia in the second and third stages, apnoea occurred in only 4.2 per cent of the babies. With ether, respiratory difficulty was encountered more frequently."

ABSTRACTS : REVIEWS : COMMENTS *and* CORRESPONDENCE

SURGERY AND GYNECOLOGY

Abstracts, Reviews and Comments from
LeRoy Long Clinic
714 Medical Arts Building, Oklahoma City

Modified Double Enterostomy (Mikulicz) in Radical Surgical Treatment of Intussusception in Children. By Barnes Woodhall, Durham, N. C. Archives of Surgery, June, 1938.

The author says that the procedure which he reports was previously advocated by Dr. Dean Lewis, Johns Hopkins Hospital, Baltimore, Lewis "stressing particularly the control of intestinal obstruction and the protection from extensive fluid loss gained by its use."

After referring to eight types of surgical operations proposed and done by as many different surgeons, the conclusion is that none has been as satisfactory as that advocated by Lewis. In discussing it he says, "The optimal surgical technic for the treatment of irreducible or gangrenous intussusception occuring in early life should insure the following essential points: (1) rapidity of execution; (2) complete removal of the irreducible or gangrenous bowel; (3) control of the concomitant intestinal obstruction; (4) control of the loss of fluid, and (5) restoration of the continuity of the intestinal canal."

There are two case reports. The first patient was a white male child 10 months of age. Illness had lasted about 72 hours and was characterized by vomiting and intermittent severe cramp-like abdominal pain. There had been much blood in the stool after an enema on second day. A physician prescribed castor oil, child became much worse—vomiting, massive bloody stools.

On admission to hospital about 72 hours after onset pulse 140, respiration 28, temperature 98, W.B.C. 12,000, Hgb. 96 per cent, well nourished but dehydrated. "The abdominal wall was soft and relaxed, with evidence of intraabdominal distention. There was a readily palpable mass extending from the right lower quadrant of the abdomen to the costal margin on the right side and thence across to the midepigastrium." It was not possible to feel the mass per rectum, but the examining finger was smeared with blood.

After consultation 150 cc. of 5 per cent dextrose solution was given intravenously, blood grouped and matched for a transfusion and patient sent to surgery for immediate operation.

"The operation consisted of resection of an irreducible and gangrenous intussusception and a double enterostomy with lateral anastomosis.

"After anesthesia had been induced with ether by the drop method, the child's abdomen was cleaned with a 3.5 per cent solution of iodine followed by 70 per cent alcohol and was draped in the usual fashion. A long midright rectus incision was made. When the peritoneum was opened, many dilated loops of small intestine presented. A mass could be felt in the right side of the abdominal cavity. With some difficulty, this was brought out into the operative wound for inspection. It consisted of an ileocecal intussusception extending to the middle of the transverse colon. The portion of the large bowel at the ring and the entering ileum were bluish black, dull and obviously gangrenous. Tentative attempts to reduce the intussusception manually by milking the distal end of the mass were futile. Resection was commenced by cutting across the ileum, with the actual cautery between crushing clamps ,at a point 8 cm. from the beginning of the intussusception. The mesentery of the ileum was divided between Kelly clamps. The cecum and the ascending colon were quite mobile, and after incision of the lateral peritoneum the mass was easily retracted mesially, exposing the mesentery of the large bowel. This was clamped and divided. Division of the transverse colon in its midportion completed the resection. The mesenteric vessels were ligated with No. 1 plain catgut sutures. The ends of the bowel, with clamps attached, were exteriorized in the upper angle of the incision, the colonic stoma being uppermost. At the suggestion of Dr. Dean Lewis, an ileocolic lateral anastomosis was performed at a point 8 cm. from the resected ends of the bowel, an outer layer of continuous fine black silk and an inner layer of No. 1 plain catgut being used. The upper peritoneal angle was closed about the exteriorized bowel with interrupted sutures of No. 1 plain catgut. The remainder of the peritoneum was closed with a continuous suture of similar material. Four stay sutures of braided silk were laid. The fascial sheath was closed with interrupted figure-of-eight sutures of No. 0 chromic catgut. The edges of the skin were approximated with interrupted sutures of fine black silk.

"Postoperative Course—The child was given a transfusion immediately after the operation of 100 cc. of citrated blood, and a continuous intravenous 'drip' of 5 per cent dextrose solution and 1.5 per cent saline solution was started. During the evening he vomited, and continuous gastric lavage was instituted. On the following day his condition rapidly improved, and the gastric siphonage was discontinued. On the third day after the operation water by mouth was given. This was followed by vomiting and by increasing abdominal distention, which became so alarming that the ileostomy was opened. Earlier in the day two stools had been passed by rectum. Relief from distention and from vomiting was immediate, and on the following day feeding by mouth was resumed. The parenteral intake of fluids was discontinued. During the next ten days the status quo was maintained, with drainage from the ileostomy and normal stools about equally divided in amount. The ends of the bowel could have been closed at any time, but this step was deferred because of the presence of an infection in the operative wound. Sixteen days after the operation bronchitis and bilateral otitis media developed. Loss of fluid through the ileostomy increased, the child's weight began to decrease, and his condition became progressively more critical. After 24 hours of parenteral intake of fluid the ends of the bowel were inverted with interrupted sutures of fine No. 1 catgut and the skin edges were approximated with silk sutures above the inverted bowel. The improvement after this procedure was dramatic, and the child was discharged on the twenty-eighth day after the operation.

"Pathologic Diagnosis:—The diagnosis was ileocecal intussusception with necrosis of bowel."

The second patient was a male child seven months of age, admitted to hospital after 30 hours during which time there had been vomiting, cramp-like pain, blood per rectum. Following is quotation from notes made at time:

"The adbomen is not distended, is soft and is not tender. Just below the umbilicus and slightly to the left of the mid-line a mass can be seen and felt. It is about the size of a peach, is fairly firm and is slightly movable. The baby does not seem to object to palpation. On rectal examination one can feel the mass very plainly, and also a depression in the center, which feels like a cervix. No blood is present on the examining finger."

At operation, after 150 c.c. 5 per cent dextrose solution intravenously, and after grouping and matching for transfusion, it was found that there was "a typical ileocecal intussusception, involving the entire large bowel to the rectosigmoid junction." It was possible to do a partial manual reduction by "milking" but when the last segment was reached it was necessary to incise the intussuscipiens longitudinally in the manner advised by Brown, after which the mass was forcibly reduced exposing a gangrenous terminal ileum and partial gangrene of cecum and appendix. The operation was completed as in the case of the first patient and the post-operative treatment was practically the same. The ends of the bowel were inverted with interrupted No. 1 plain catgut sutures on the 10th day. There was healing per primam and the patient was discharged cured on the twenty-eighth day after admission.

The summary as written by the author is as follows:

"Resection, or similar radical method, for the treatment of irreducible or gangrenous intussuseption occuring in early life has a mortality of 70 per cent. In the two most recent consecutive and successful resections in the Johns Hopkins Hospital, the usual Mikulicz procedure has been modified by the addition of a lateral anastomosis. In addition to guaranteeing immediate continuity of the lumen of the bowel this technical modification has proved distinctly valuable in controlling the resultant intestinal obstruction and fluid loss."

LeRoy Long.

Premenstrual Tension; S. Leon Israel; Journal of the American Medical Association; May 21, 1938; page 1721.

This author treated seven patients with marked premenstrual tension by use of progesterone upon the basis that it was due to defective luteinization with subsequent progestin deficiency or relative hyperestrogenemia.

The seven patients were given one international unit of progesterone intramuscularly daily or every other day during the second half of each menstrual cycle for from two to three months. Five were entirely symptom free and the remaining two noted improvement, but in six of the patients the premenstrual tension returned with withdrawal of treatment. The remaining patient was symptom free as far as premenstrual tension was concerned for two years.

The recurrent instances were treated by roentgen therapy with low dose irradiation of the pituitary gland and ovaries. In all the periodicity of the menstrual cycle was undisturbed and they received symptomatic relief with the premenstrual tension.

This author, naturally, strongly emphasizes the importance of the most careful application of the roentgen therapy for this symptom. He is unable to explain the functional alterations of the pituitary gland and ovaries produced by low dose X-ray.

Comments: Premenstrual tension is entirely subjective symptomatology. One would, therefore, feel that the patient suffering from this symptom would require the most careful general physical investigation and proper treatment prior to the use of progestin or X-ray for its relief. Also, the degree of debility or in other words the severity of the symptoms would naturally have to be rather marked prior to the tedious, almost purely substitutional progestin therapy or to the rather questionable use of deep X-ray therapy for a symptom of this character.

However, with the proper conscientious complete investigation of the individual and in the instances of very severe premenstrual tension, it is well to have the basis of this work in which substitutional relief can be obtained by the use of progestin during the last half of the menstrual cycle and that permanent relief was obtained in this series of patients by the employment of properly administered roentgen therapy of the pituitary gland.

Wendell Long.

The Menopause and its Management; Emil Novak; Journal of the American Medical Association; February 26, 1938; page 619.

This is a most excellent article dealing with the management of the menopause which Dr. Novak thinks should be based almost entirely upon the particular woman's entire menopausal syndrome, making it an individual problem in her instance and employing glandular preparations as indicated as an adjunct to the remainder of her medical care. In other words, the simple use of organotherapy routinely without the combined individual medical attention of the patient is certainly an improper approach to the care of the average woman in the menopause period.

"There are wide variations in character and degree of the symptoms presented by menopausal women, depending not only on the severity of the hormonal readjustment but also on such factors as the patient's psychic make-up, her social, intellectual and economic status, her family life and her general physical condition. The method of approach must therefore be adapted to the individual case but should always be combined with sympathetic understanding and reassurance and a patient effort to discover, evaluate and adjust such factors as I have mentioned.

"The well known vasomotor group of symptoms are the only ones which seem clearly attributable to the hormonal readjustment of the menopause, though it is possible that others may at times be directly produced. However, the menopausal woman may present many other manifestations only indirectly of menopausal significance, and yet often constituting real problems in treatment, which must be along psychic and general rather than endocrine lines. Only a minority of menopausal women need medical treatment, and a much smaller proportion require organotherapy.

"While the mechanism of the vasomotor menopausal symptoms is not clear, the immediate factor is quite certainly the cessation of ovarian function, and ovarian therapy with the now available effective preparations of estrogens is a rational procedure. The results are variable, rarely brilliant, but often satisfactory to both patient and physician. Light irradiation of the hypophysis may be tried if organotherapy is unsuccessful, but its too promiscuous use should be decried."

As to the dosage, "In many instances rather small doses of estrogenic substance seem to suffice; in others much larger doses are required. If, for example, intramuscular injections of 2,500 or 5,000 international units of estrogenic substance in oil (such as theelin, amniotin, or progynon-B) do not give relief, the dosage may be increased to 10,000, 20,000 or rarely even 50,000 units.

"The duration of treatment is likewise to be adapted to individual indications. Menopausal symptoms are rarely persistently troublesome, and it is usually only during exacerbations that active hypodermic medication is necessary, and only a few injections may be required. In the intervals the patient may need no medication, or at most the administration of some simple sedative of the bromide or barbituric acid group.

"In other cases the oral administration of an active estrogenic preparation (amniotin, theelin, theelol, progynon-DH) may be necessary and, in fact, the milder forms of disturbance may require nothing more than oral treatment at any time."

Comment: It is evident that it is fallacious to attribute practically all symptoms which occur in women between the ages of 35 and 60 to the menopause and it is equally fallacious to treat practically all symptoms in women in this age group by routine estrogenic administration.

There is no question as to the advantage associated with the proper administration of estrogenic substances in elected patients in the menopause who have vasomotor symptoms and who have been carefully examined with proper treatment of any other physical defects.

The importance Dr. Novak places upon the individualization of examination and treatment of all women in the menopause cannot be too highly regarded if the results of therapy in individual hands of particular women is to be satisfactory.

Wendell Long.

A Consideration of Artificial Fever Therapy and Sulfanilamide Therapy in the Treatment of Gonorrheal Infections of Women. By Randall, Krusen and Bannick, Rochester, Minn. American Journal of Obstetrics and Gynecology, August, 1938.

A group of 37 patients were treated by fever therapy. Thirty-one of these received a single 10 hour session in the fever cabinet. Six were given multiple artificial fever treatments. Thirty-four of the 37 patients treated with fever therapy were found to have consistently negative cultures following treatment. In two cases having positive cultures after fever treatment sulfanilamide was employed and negative cultures were obtained.

Sixteen patients were treated by oral administration of sulfanilamide. Fifteen had consistently negative chocolate blood agar cultures after treatment. The average duration of treatment was 10½ days and the average amount of drug administered was 590 grains with average daily dose of more than 54 grains. The one failure of sulfanilamide treatment was given fever therapy and developed negative cultures.

From their experience these authors feel that gonorrheal infections of the female genital tract should first be treated by the administration of sulfanilamide and when the infections are intractable to this metnod of treatment, a combination with artificial fever therapy is desirable.

They feel that the greatest care should be employed in the administration of sulfanilamide and that it should be done under the constant supervision and direction of a physician.

They also feel that fever therapy, to be effective, must be most carefully controlled with a well trained team giving the patient constant supervision and careful attention to all details.

Comment: These are amazingly good results. There is no information contained in the article about the average age of the patients and their general physical condition, but it is taken that they were selected patients of reasonably early adult life in otherwise good general physical condition making good risks for strenuous treatment of this character.

My experience with sulfanilamide and fever therapy in the treatment of gonorrheal infections in women is small, but it is quite clear that every possible precaution should be taken in general examinations before sulfanilamide is employed and that the individual should be under constant care during the time that the drug is employed.

It is also my observation that fever therapy should be undertaken as a hospital treatment only and only where there is a trained personnel with a doctor familiar with the entire treatment in direct charge all of the time. The physical equipment is of course necessary but the most careful direction and management of the treatment is essential to avoid injury if not death of the patient.

It would therefore seem wise at this time to consider sulfanilamide in large effective dosages and fever therapy as agencies to employ in the resistant infections rather than in every instance of infection, many of which will respond to other means of treatment satisfactorily.

Wendell Long.

EYE, EAR, NOSE AND THROAT

Edited by Marvin D. Henley, M.D.
911 Medical Arts Building, Tulsa

Preoperative Management of Acute Streptococcic Mastoiditis. E. Miles Atkinson, M.D., F.R.C.S. (Eng.), New York. Archives of Otolaryngology, July, 1938.

Ambroise Pare is quoted as saying "that he dressed the wounds but God healed them." What immunity is, is hard to definitely state, but without this defense mechanism, whatever it is, surgery and medicine would be quite impotent.

Surgery is discussed from the time of and before Lister, when the localization of the infection was awaited before drainage was instigated. In the space of approximately 50 years, surgery has as the author expressed it become "superabundant." "Judgment gave way before dexterity." The right iliac fossa and the tonsillar region were the most popular areas of investigation. Subsequently an area of infection was opened earlier and earlier not awaiting localization. The defense mechanism or the pathology of the body apparently were more or less ignored. Surgical intervention in the early infections must insure entire removal of the infected area, as say an appendix. A streptococci infection of the finger was widely incised. When the infection occurs at a site that cannot be entirely removed then according to the author "the arguments in favor of early surgical intervention fall to the ground." This is applicable to the mastoid region. A virulent infection here is one of the most dangerous in the body. Operation before localization and walling off of avenues of extension, i.e. blood stream, petrous portion of the temporal bone and the mastoid bone itself, is most dangerous. The different types of mastoiditis are discussed.

The author's version is that a patient with mastoiditis is suffering from a bactermia if not a septicemia. Rest is of paramount importance and to get this morphine is used freely. Transfusions are advisable. Sulfanilimide is valuable but should not be used indiscriminately. If shock therapy is used, it should be employed late.

Seven to ten days should show definite signs of localization, such as a lowering of temperature with a daily swing, leukoocytosis and localized tenderness over the mastoid.

There is a table of the author's patients operated early and late. The results show "that when the expectant treatment is adopted there are fewer

complications, a lower mortality and a shorter period of hospitalization."

Sulphanilamide in Gonorrheal Ophthalmia. Luis J. Fernandez, M.D., and Ricardo F. Fernandez, M.D., San Juan, Puerto Rico. American Journal of Ophthalmology, July, 1938.

Fourteen cases were reported in December, 1936, which were treated with parenteral milk injections, frequent irrigations and local antiseptics. This series is made up of eight cases of gonorrheal ophthalmia where sulfanilimide was also used. Diagnosis was made with Gram's stain. The dosage is given. The patients were not hospitalized. The summary and conclusions are:

1. All patients who received sulfanilamide recovered in a spectacular manner and in a shorter period of time than that required by other accepted forms of treatment.

2. Cases of primary eye infection, where no preexisting focus of gonorrheal infection could be demonstrated, responded as well as those of secondary eye infection. We must emphasize that these cases of primary infection of the eye failed, as a rule, to respond to any other type of treatment hitherto employed.

3. The results obtained in this series of cases warrant the judicious use of sulfanilamide in all cases of gonorrheal ophthalmia in adults, whenever there is no serious contraindication.

4. It is highly desirable that this method of treatment be tested by our colleagues to corroborate our findings.

5. The mode of action of this drug needs more thorough investigation. We have only checked our clinical findings by routine laboratory examinations (smears and cultures), but it is yet necessary to determine the minimal effective dose.

6. We have had no opportunity to treat ophthalmia neonatorum by this method, but see no reason why it should not be as effective as in adults.

7. Smaller doses and special precautions must be used for patients with renal insufficiency, because the excretion of sulfanilamide is slow, and in such patients would tend towards accumulation of the drug in the blood.

The Effects of Sulfanilamide as Determined in the Eyes of Rabbits. V. C. Rambo, M.D., Boston. American Journal of Ophthalmology, July, 1938.

The author's conclusions are:

The eye is an excellent organ in which to test the action of sulfanilamide. The rabbit stands sulfanilamide well. The injection of a saturated solution of sulfanilamide into the conjunctiva, or directly into the anterior chamber, produces no permanent observable damage to the eye. Injection of sulfanilamide into the vitreous produces moderate opacity of the vitreous, and after a few days a low-grade iritis of short duration, but has no demonstrable effect on the retinal function.

Sulfanilamide by mouth in adequate, regularly repeated doses, markedly checks the growth of an observable culture of hemolytic streptococci in the vitreous of a rabbit. But even if the treatment is continued, the vitreous eventually becomes completely purulent.

When streptococcus hemolyticus is injected into the anterior chamber, sulfanilamide administered by mouth for only four or five days not only checks but permanently overcomes the infection.

Obviously, leucocytes can reach organisms in the center of the vitreous much less readily than they can reach organisms in the anterior chamber. Hence our experiments support the view that sulfanilamide alone inhibits streptococci, but that to destroy the organisms, leucocytes and possibly other factors are early required in addition.

Injection of streptococci into the anterior chamber with 0.20 gm. of sulfanilamide in water suspension, has protected three out of four eyes from infection as effectively as sulfanilamide by mouth. That the protection was not from the blood stream was proved by the fact that the other eyes of the same rabbits, injected with hemolytic streptococci and not treated, were lost from the infection. It is, therefore, evident that sulfanilamide is effective when used locally only. It is very important, however, that the sulfanilamide be kept at an effective concentration at the site of infection. This is difficult to accomplish because of the great diffusibility of the drug.

These experimental observations indicate that, properly administered, sulfanilamide will overcome certain intraocular infections. They do not indicate, however, that it will save the eye in a case of rapidly progressive purulent endophthalmitis such as may follow accidental or operative trauma. Sulfanilamide by mouth should be useful in treating less virulent infections already established in the anterior chamber, or even in the vitreous. Other treatment, however, such as the use of diphtheria antitoxin, should be employed in addition, especially when the vitreous is infected. Sulfanilamide in 0.5 per cent or saturated solution, as a powder, or as an ointment, may be used locally for infections of the conjunctiva or cornea. If the r e q u i r e m e n t of sufficient, constant, necessary strength of solution is fulfilled, and the organisms are susceptible to the drug, the results should be good. In recent wounds of the cornea or conjunctiva, sulfanilamide solution may be used as a cleansing agent, all needed surgery then done, and sulfanilamide powder dusted into the wound.

Our experiments c o n f i r m Jaeger's conclusion, based on clinical observations, that sulfanilamide is of service by local application. However, he was possibly over-enthusiastic concerning the number of conditions which he found benefited by the local use of sulfanilamide. Other methods of applying the drug locally than have been mentioned by Jaeger may prove successful in local infections which are not amenable to known treatment. However, the giving of sulfanilamide by mouth, in addition, should not be omitted unless contraindicated by the general condition of the patient or by special circumstances.

The local use of sulfanilamide ,even if of itself insufficient, may make the amount needed by mouth much smaller, and vice versa. In certain conditions, full local and general treatment may be needed—for instance sulfanilamide might be dusted into the conjunctival sac as well as given by mouth, in a case of pneumococcic ulceration of the cornea.

By injections of the drug into an organ such as the eye, a concentration far greater than that possible in the blood can be maintained. This greater concentration may make it possible to treat successfully local infections with organisms resistant to treatment with the drug administered by mouth.

Preliminary treatment with sulfanilamide before expected infection, as from a foreign body in the eye, or from an operation in a poor risk, should receive consideration. For this purpose, it is possible that the local use of sulfanilamide may be sufficient.

ORTHOPAEDIC SURGERY

Edited by Earl D. McBride, M.D., F.A.C.S.
717 North Robinson Street, Oklahoma City

Treatment of Fractures of the Shaft of the Femur. An analysis of One Hundred and Twenty Cases. Robert H. Kennedy. Annals of Surgery, CVII, 419, March, 1938.

One hundred and twenty consecutive cases of

recent fractures of the shaft of the femur treated by the staff of the Beekman Street Hospital from January, 1924, to March, 1932, are analyzed by the author. Patients are classified according to the location of the fracture and according to age.

Seventeen early deaths are reported in the series, including one patient who died after amputation was performed. Two other patients required amputations. This leaves 101 patients with severe multiple injuries.

Forty-eight of the patients analyzed were under 16 years of age. Forty-seven had fractures resulting from automobile accidents. There were but four compound fractures and 20 comminuted fractures in the series.

The primary hospital treatment in 43 cases was adhesive plaster traction with suspension in a Thomas splint; skeletal traction was used in 35 cases; overhead adhesive plaster traction in 11 cases; reduction and application of a plaster spica in 11 cases, and open reduction in one case.

The final treatment, except when complications occurred, was skeletal traction in 43 cases; adhesive plaster traction with suspension in a Thomas splint in 31 cases; reduction and application of a plaster spica in 12 cases; overhead adhesive plaster traction in 11 cases, and open reduction in four cases.

The initial treatment was unsatisfactory in 14 cases of adhesive plaster traction with suspension and in two cases treated by reduction and application of plaster spica.

Traction methods were employed in treating 87 per cent of these patients. The author prefers the Kirschner wire to tongs and Steinmann pins which were used in the earlier cases.

There were four open reductions, all in children. In three cases there were simple fractures and one was compound. In the compound-fracture case infection developed, followed by osteomyelitis, but solid union occurred. Three patients required late open reductions for complications. Four patients sustained refractures. In 84 patients solid bony union was known to have developed and in one non-union developed.

The conclusion of the author is that by traction methods bony union with relatively little shortening and good functional results may be obtained in a high percentage of cases. He does not feel that the results obtained in this series were good enough. Overhead adhesive traction was satisfactory in children under five years of age. Skin traction was unsatisfactory in children over five years of age from the point of view of recovering original length. Skeletal traction in adults gave too high an incidence of infection. He condemns closed reduction and application of a plaster spica.

In March, 1932, the surgeons changed to Russell traction in all of these groups. They are still not satisfied with their results and believe that they should perform more open reductions with internal fixation especially in transverse fractures of the middle and lower thirds of the femur.

Skeletal traction has been a marked improvement over reduction and application of a plaster spica or adhesive plaster traction with suspension in a Thomas splint. No single method is applicable to all cases and one should be ready to use each type of treatment according to the individual indications.

Injuries About the Shoulder Joint in Children, Exclusive of Fractures of the Clavicle. John E. Sullivan. Annals of Surgery, CVII, 594, April, 1938.

A study was made of the records of 61 children under 12 years of age, with injuries about the shoulder joint, exclusive of fractures of the clavicle, who had been admitted to the Children's Surgical Service of Bellevue Hospital during the past ten years.

Fifty-five of these patients had fractures of the upper end of the humerus, four had fractures of the scapula, one had a subluxation of the head of the humerus, and one had an acromioclavicular separation. There were no instances of separation of the upper humeral epiphysis or of apparent injury to this epiphysis.

Most of the fractures were produced by a fall, and the author describes in detail the mechanics of the injury. Various methods of treatment did not give anatomical reductions but functional results were excellent and in many instances complete anatomical readjustment occurred in a few months.

There were three pathological fractures of the upper end of the humerus in the series. Fractures occurred more often in the left than in the right humerus. There were three cases of fractures of the body of the scapula which were all caused by severe trauma. The methods of treatment used were manipulations under anesthesia or traction.

The following reprints of articles of interest have come to my desk recently:

"Posterior Dislocation of the First Cervical Vertebra with Fracture of the Odontoid Process." Rudolph S. Reich, Surgery, Vol. 3, No. 3, p. 416-420, March, 1938.

"Treatment of Intercondylar Fractures of the Elbow by Means of Traction." Rudolph S. Reich, Jr. of Bone & Joint Surg., Vol. XVIII, No. 4, p. 997-1004, October, 1936.

"Extra-Articular Disabilities of the Shoulder Joint," Rudolph S. Reich, The Ohio St. Med. Jr., Vol. 32, October, 1936, No. 10.

"Treatment of Fractures of the Shaft of the Femur," Robert H. Kennedy, Annals of Surg., Vol. 107, No. 3, March, 1938.

"Osteomyelitis in Compound Fractures," Robert H. Kennedy, Amer. Jr. of Surg., New Series, Vol. XXXVIII, No. 2, p. 327-331, November, 1937.

"Amputations: General Considerations," Robert H. Kennedy, Surgical Clinics of N. A., April, 1938. New York Number.

"Treatment of Birth Fractures of the Femur," Wilton H. Robinson, Jr. of Bone & Joint Surg., Vol. XX, No. 3, p. 778-780, July, 1938.

INTERNAL MEDICINE

Edited by Hugh Jeter, M.D., 1200 North Walker, Oklahoma City

Blood, a Review of the Recent Literature. Frank H. Bethell, M.D., Raphael Isaacs, M.D., S. Milton Goldhamer, M.D., and Cyrus C. Sturgis, M.D., Ann Arbor, Mich. (Archives of Internal Medicine, Volume 61, No. 6, June, 1938).

This represents a remarkable review of blood dyscrasias and allied diseases covering 842 entirely different articles written on the subject.

Pernicious Anemia

Kahn studied case records of 840 persons with pernicious anemia and found none in which hydrochloric acid was secreted normally and incidentally none which had peptic ulcer. Other interesting observations relative to the intrinsic and extrinsic factors as related to pernicious anemia are recorded.

The problem of bioassay of preparations proposed for the treatment of pernicious anemia has attracted a number of investigators. It is generally concluded that animals do not satisfac-

torily supplant the human being as a basis for the assay of potency of liver extracts.

The Average Length of Maintenance

Moench studied the liver extract requirement in 32 patients. Therapy consisted of the intramuscular injection of an average monthly dose of the amount of commercially prepared concentrated liver extract derived from 300 grams of liver. This dosage maintained the red cells of 70 per cent of the patients above the minimum normal. Time factors are also recorded.

Sellers made the statement that prior to the introduction of liver in the treatment of pernicious anemia the average duration of life after the diagnosis was made was estimated at two to two and one-half years. Now it is generally agreed that with proper liver therapy the fatal termination may be postponed indefinitely in a majority of cases. He quoted Stocks as stating that since 1926, when liver treatment was introduced, there has been "an average lengthening of life of all persons affected with pernicious anemia in England and Wales of about three to three and one-half years."

Interesting reports of many other varieties of anemia and observations in connection with these are also reported. Interesting cases of polycythemia and purpura hemorrhagica are mentioned.

Hemophilia

Specific treatment seems to remain a mystery. Whole blood, citrated blood, human plasma, human and animal serum, defibrinated blood, hemostatic preparations, fibrinogen, cephalin, calcium, sodium citrate, protein shock, liver and its derivatives, whole ovary, ovarian extracts, histidine, estrogenic substance and even the use of maggot therapy have all been tried, but favorable results are doubtful.

Banti's Disease

The existence of this disease at present is questioned. The pathologic changes, which were thought by Banti to be specific, have been shown by Thompson and his co-workers to be due to increased pressure in the splenic vein, with secondary effects in the spleen.

Infectious Mononucleosis

The etiology seems to remain unknown. Davidsohn as a result of a careful serological study of 30 cases has given important technical data relative to the agglutination of sheep cell test.

Agranulocytosis

Here again no single etiological factor can be established. Reports indicate a variety of factors, drug therapy, infections, allergic reactions and auto intoxication, play important roles in different cases. No new or more specific therapeutic measures have been suggested.

Sulfanilamide has been definitely included among the drugs capable of causing or playing an important role in the cause of agranulocytosis.

Myelogram

Many reports are made with observations on bone marrow and bone marrow biopsies. Sedimentation rates and methods are discussed.

PLASTIC SURGERY

Edited by
GEO. H. KIMBALL, M.D., F.A.C.S.
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Carcinoma Developing On Extensive Scars. The Inefficiency of Pinch Grafts as a Prophylactic Measure. Max Danzis, M.D., F.A.C.S., Milton Friedman, M.D., and Louis J. Levinson, M.D.

Carcinoma is encountered rather infrequently on old scars both following burns and trauma. Extensive, thick, dense scars, which are avascular and poorly nourished, do not tolerate mild injuries due to pressure, irritation of clothing, scratching, etc., as well as the normal skin. After a period of years, varying from 12 to 20, the incompletely developed and poorly nourished skin overlying the scar loses its capacity to repair these minor injuries, and a persistent ulceration develops, which may become malignant.

The authors point out that prophylactic treatment should be employed to avoid such scars. They believe that pinch grafts are useless in preventing the future development of carcinomata. As stated by Treves and Pack: "The Thiersch grafts do not simulate normal skin, since none of the skin accessories, such as hair follicles, sweat and oil glands, are present, and consequently the grafted area is dry, without oil, and subject to the same degenerations as scar tissue." Also, "Cancer has been known to originate on Thiersch-grafted regions."

The authors report two cases which illustrate the development of carcinoma at the site of an old scar. These lesions were originally covered by pinch grafts.

Comment: One sees not infrequently malignant transformation at the site of a scar. I have seen more malignant changes occur in scars left by burns than in those caused by trauma. Some of the cases have been seen where no grafts had been used but healing had been allowed to occur by a natural process. I have not yet seen a malignant change occur at the site of a skin graft.

I believe the authors somewhat exaggerate the possibilities of malignant changes following this type of graft. The changes as I have observed occur when no graft is used. It is true that a split graft or a full thickness graft gives a much better final result than a pinch graft. It is not always possible to obtain the type of graft that is ideal. It is common in children especially to encounter extensive burns where one is unable to secure any kind of graft except a small Thiersch graft.

One is extremely grateful to be able to cover or epithelialize an extensive raw surface by any means whatever. Many of the children survive and are apparently leading useful lives.

UROLOGY

Edited by D. W. Branham, M.D.
514 Medical Arts Building, Oklahoma City

The Antipyretic Action of Intravenous Administration of Mercurochrome in Acute Pyelonephritis, John L. Emmett, M.D., Journal of Urology, August, 1938.

Although mercurochrome given intravenously has been in use at the Mayo Clinic for a number of years, of late it has been administered more frequently as a therapeutic measure for shortening the acute manifestations of pyelonephritis. Sufficient favorable results have been obtained when it is given in smaller doses (less than 10 c.c. of a one per cent solution) without bad reactions to prompt the author to recommend its use. Statistical data is presented to reinforce his argument as to its value. The drug is given two or three times at daily intervals, however, if no improvement is noted after the first two doses it is discontinued.

It is emphasized that it is not a potent preparation for its bactercidal effect and other chemotherapeutic measures must be prescribed later to complete the cure.

Comment: Careful reading of this article failed to convince me that mercurochrome has any place in our therapeutic armanentarium as far as its use intravenously is concerned. One has only to

remember the case reports presented a few years back detailing the severe reactions, with their irritative and degenerative effect on the kidney following its administration. It is true the dose given then was somewhat larger than that recommended in this article but nevertheless the danger is only slightly less. I do not believe any mercurial preparation has a place in modern medicine as far as its intravenous use is concerned due to its potential destructive effect on renal tissue. The profession in general had its day with mercurochrome intravenously and its judgment has found the drug unsafe and even dangerous. In this day of much more efficient drugs and therapeutic measures for the treatment of urologic infections, mercurochrome intravenously had best be left in the list of discarded remedies.

Vas Deferens Anastomosis, Successful Repair Four Years Subsequent to Bilateral Vasectomy, Elmer D. Twyman, M.D., and Charles S. Nelson, M.D., Kansas City, Missouri, The Urologic and Cutaneous Review, August, 1938.

A report that details the successful repair of a vas deferens following a vasectomy performed for the production of sterility four years previously. Not only were spermatozoa found in the seminal fluid, but the sexual partners later gave birth to a child.

The technique in repairing the strictured vas was essentially the removal of the strictured area and the two ends were brought together by a catgut suture threaded up the lumen of both portions and tied together forming a hammock loop—following which all layers were approximated.

Comment: In this day of mass vasectomies for the production of sterility it is a comforting bit of news to hear of a successful anastomosis after such a long duration of time. One must, however, remember chances are rather slight for such a fortunate outcome and for that reason both patient and doctor should think twice before allowing such a mutilating operation to be performed.

Human Requirement of Vitamin D

P. C. Jeans and Genevieve Stearns, Iowa City (Journal A.M.A., Aug 20, 1938), define the requirements of vitamin D as those amounts which, with ample intakes of calcium and phosphorus and a diet otherwise adequate, insure sufficient retention of calcium and phosphorus to permit normal growth and mineralization of the skeleton and teeth of infants and children, maintenance of bony and dental structures during adult life and a sufficient supply for mother and infant during pregnancy and lactation. Individual variation in ability to utilize the calcium and phosphorus of the diet without added vitamin D exists at all age periods. A high proportion of infants have poor retention and only a very few retain an ample amount without vitamin D. As the age increases persons in increased proportion are able to retain adequate amounts of these minerals without vitamin D, but at all age periods some persons are found who are not efficient. In defining a standard for the vitamin D requirement it seems desirable to state an amount which will be satisfactory for those who are less efficient. Vitamin D does not decrease the minimum requirement of calcium and phosphorus and this vitamin cannot produce a good retention in a person who is ingesting less than the requirement for these minerals. Vitamin D is not as well utilized on a unit for unit basis from the more concentrated preparations as from those preparations in which it is more widely dispersed. The most desirable concentration has not been determined, but apparently the concentration found in cod liver oil is as effective as any lesser concentration studied. The vitamin D requirement of the full term artificially fed baby is probably between 300 and 400 units a day. Vitamin D is necessary for many and useful for most breast-fed babies. It is tentatively considered that prematurely born babies may require twice as much vitamin D as full term babies during the early period of most rapid growth, after which time the requirement should be the same as for babies born at term. For children between infancy and adolescence a daily allowance of at least 750 cc. of milk together with from 300 to 400 units of vitamin D permits consistently ample retention of calcium and phosphorus. For adolescents a need for vitamin D exists, but insufficient data are available to permit an estimate of the quantity required. It seems probable that from 300 to 400 units a day would be satisfactory. For adults the optimal amount of vitamin D, if a need exists, remains to be determined. It appears strongly advisable to give vitamin D during pregnancy and lactation. The optimal amount is not known. During lactation the requirement may be greater than at any other period of life and a daily dosage of 800 units or more is suggested, together with an abundant intake of calcium and phosphorus.

Rabies: Report of Twelve Cases, With Discussion of Prophylaxis

Maurice L. Blatt, Samuel J. Hoffman and Maurice Schneider, Chicago (Journal A.M.A., Aug. 20, 1938), discuss the 12 cases of rabies admitted to the Cook County Hospital between 1929 and 1937. All proved fatal. The diagnosis in each case was confirmed by necropsy. The incubation period for the patients varied from two weeks to two months. The closer the site of the bite to the central nervous system the shorter was the incubation period. Wounds made by the bites of animals should immediately be cauterized with nitric acid. The Pasteur treatment or one of its modifications should be instituted in accordance with rules outlined and accepted. The 12 persons whose cases are reported died after suffering great agony and might have been saved if adequate prophylactic measures had been instituted immediately. They were admitted to the hospital after having been ill from two to seven days and anywhere from two weeks to two months after they had been bitten by dogs. Stringent enforcement of regulations governing ownership, licensure, muzzling and leashing of dogs would have prevented the bites. The extent of this problem is evidenced by the fact that in the state of Illinois alone 18,466 dog bites were reported to the state department of public health in 1936 and that there were ten deaths from rabies. A knowledge of similar facts would divulge a tremendous loss of time and of lives of human beings and animals in the United States from a preventable cause. When such knowledge becomes public it will be of inestimable educational value in the eradication of this dreadful malady.

Use of Serum in Treatment of Higher Types of Pneumonia

Pneumonia of the higher types is an important part of the pneumonia problem. In a collected series of 6,545 cases of pneumococcic pneumonia Norman Plummer, New York (Journal A.M.A., Aug. 20, 1938), finds that more than 50 per cent of the cases were of the higher types, 30 per cent being of types IV, V, VII, VIII and XIV. He and his associates used antipneumococcus serum in 111 cases, with a rather marked clinical response and an appreciable effect on the mortality rate for the combined series of cases of pneumonia of types IV, V, VII, VII and XIV. At present there are available refined and concentrated preparations of horse and of rabbit serum that are high in antibody content and almost entirely free from reaction-

causing substance. With such products the prospects are excellent for obtaining increasingly better results in the treatment of all types of pneumococcic pneumonia. Nine patients with type III pneumonia were treated with concentrated antipneumococcus rabbit serum, the last six having had no untoward reactions. Of the nine, three died and six recovered. Of those who recovered, one had a positive blood culture when serum treatment was instituted. Three were treated very early in the course of the disease and showed prompt response to a large unitage of serum. Antipneumococcus rabbit serum has taken the focus of attention recently, but whether rabbit serum, unit for unit, is more effective than horse serum remains to be proved.

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Vitamin B1: Methods of Assay and Food Sources

Hazel E. Munsell, Washington, D. C. (Journal A.M.A., September 3, 1938), states that the importance of vitamin B1 in physiologic and pathologic conditions has emphasized markedly the need of devising accurate methods for the quantitative determination of this substance in foods. Until recently the chemical identity of vitamin B1 was unknown, rendering it impossible to develop chemical methods of analysis, and accordingly recourse was had to biologic methods of assay using rats and pigeons as test animals. Much information regarding the vitamin B1 content of foods has been gained in this way, especially by the method in which the growth of rats was used as the measure of potency. The technical aspects of various methods of bio-assay for vitamin B1 are presented from the point of view of quantitative interpretation of the results obtained and the chemical methods that are being developed are discussed. The article also evaluates foods as sources of the vitamin.

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Gastroduodenostomy For Certain Duodenal Ulcers

Howard M. Clute and John S. Sprague, Boston (Journal A.M.A., September 3, 1938), urge that gastroduodenostomy be given more consideration when surgical treatment is necessary in the management of certain duodenal ulcers. Although opinions and experiences as to the occurrence of stomal ulcers after gastroduodenostomy differ widely, they have been unable to discover evidence of a high percentage of these postoperative complications. They believe that gastroduodenostomy results in a nearer approach to normal gastric physiology than other short-circuiting operations. They discuss the technic and present the results that they obtained following gastroduodenostomy in seven cases of pyloric stenosis, in two cases of persistent pain from duodenal ulcer in spite of long medical treatment, two cases of duodenal ulcer with serious hemorrhages, two cases of ulcer high on the lesser curvature of the stomach and two bleeding gastrojejunal ulcers.

Report of Licenses Granted to Practice Medicine

NAME	Year of Birth	Place of Birth	School of Graduation	Year of Graduation	Permanent or Present Address
Wiggins, Howell Ernest	1911	Hobart, Okla.	Oklahoma University	1936	Los Angeles, Calif.
Howard, Robert Bruce	1913	Oklahoma City, Okla.	Oklahoma University	1936	Los Angeles, Calif.
Morgan, Vance Fredrick	1909	Foster, Okla.	Oklahoma University	1934	Oklahoma City, Okla.
Evans, Logan I.	1888	....., Kansas.	Oklahoma University	1916	Oklahoma City, Okla
Shaver, S. Robert	1905	Quinton, Okla.	Oklahoma University	1937	Oklahoma City, Okla.
Lachmann, Ernst	1901	Glogau, Germany	University Breslau	1925	Oklahoma City, Okla.
Spencer, Walter Carlton Edw.	1898	Bradford, Pa.	University Texas	1931	Greenville, Miss.
Word, Lee Bailey	1904	Windom, Texas	University Arkansas	1930	Bartlesville, Okla.
Wilson, George Stewart	1895	Eaton, Kansas	Washington Univ.	1927	Enid, Okla.
Willie, James Asa	1904	Corsicana, Texas	University Texas	1929	Oklahoma City, Okla.
Whitney, Merle Lemuel	1908	Talmage, Kansas	University Kansas	1935	Oklahoma City, Okla.
Trent, Robert Irvine	1908	Goodwill, W. Va.	University Virginia	1933	Oklahoma City, Okla.
Oakes, Charles Gratton	1908	Batesville, Ark.	University Kansas	1934	Sapulpa & Tulsa, Ok.
Muntz, Earl Russell	1908	Elgin, Ill.	Univ. Wisconsin	1932	Ada, Okla.
Mitchell, Tom Hall	1900	Bessemer, Ala.	Med. Col. of Va.	1931	Tulsa, Okla.
McKenzie, Walten Holt	1909	Enid, Okla.	Washington Univ.	1934	Enid, Okla.
Lovett, Ivan Clair	1906	Lineville, Iowa.	Univ. of Iowa	1934	Tulsa, Okla.
Colonna, Paul Crenshaw	1892	Norfolk, Va.	Johns Hopkins Univ.	1920	Oklahoma City, Okla.
Shackelford, John William	1902	Carrollton, Miss.	Tulane University	1926	Greenville, Miss.
Newell, Waldo Bee, Jr.	1913	Hunter, Okla.	Vanderbilt Univ.	1937	Enid, Okla.
Cotton, Bert Hollis	1911	Sallisaw, Okla.	Oklahoma University	1937	Sallisaw, Okla.
Lienke, Joseph Reid	1912	Hydro, Okla.	Oklahoma University	1937	Hydro, Okla.
Young, Andrew Merriman III	1913	Oklahoma City, Okla.	Oklahoma University	1937	Oklahoma City, Okla.
Mead, William Wesley	1913	Whitecloud, Kans.	Oklahoma University	1937	Guthrie, Okla.
Bohlmann, Wilbur F.	1912	Okarche, Okla.	Oklahoma University	1937	Oklahoma City, Okla.
Bloss, Claude M., Jr.	1910	Tecumseh, Okla.	Oklahoma University	1937	Okemah, Okla.
Fulton, W. R.	1867	....., ...	Barnes Medical Col.	1902	Blackgum, Okla.
Grant, Verne V.	1882	Columbia City, Ind.	University Med. Col.	1907	Oklahoma City, Okla.
Epps, Curtis Howard	1911	Springfield, Mo.	Washington Univ.	1936	Oklahoma City, Okla.
Ryan, Robert O.	1902	Hickory, Okla.	Oklahoma University	1937	Canton, Okla.
Gallagher, Clarence Alfred	1911	Stillwater, Okla.	Oklahoma University	1937	Stillwater, Okla.
Clark, Ralph Otis	1908	Ravia, Okla.	Oklahoma University	1937	Roff, Okla.
Layton, Otto Earl	1906	Cleveland, Okla.	Oklahoma University	1937	Collinsville, Okla.
Tallant, George Albert	1902	McKinney, Texas	Oklahoma University	1936	Konawa, Okla.
Hoyt, Jonathan	1897	Fresno, Calif.	Oklahoma University	1937	Wayne, Okla.
O'Leary, Charles Marion	1909	....., Okla.	Oklahoma University	1934	Oklahoma City, Okla.
Brundage, Bert Truman	1913	....., Okla.	Oklahoma University	1936	Thomas, Okla.
Loy, William A.	1913	Enid, Okla.	Oklahoma University	1937	Guthrie, Okla.
McIntosh, Robert Kerr, Jr.	1913	Bennington, Okla.	Oklahoma University	1937	Tahlequah, Okla.
Pugh, Robert Eugene	1910	Lawton, Okla.	Oklahoma University	1936	Haskell, Okla.
Murray, Forney Long	1906	....., Okla.	Oklahoma University	1937	Malta Bend, Mo.
McInnis, James Thermon	1910	Carthage, N. C.	Oklahoma University	1937	Pampa, Texas.
Mulmed, Earl I.	1915	Oklahoma City, Okla.	Oklahoma University	1937	Oklahoma City, Okla.
Oglesbee, Carosn LeRoy	1906	New Canton, Ill.	Oklahoma University	1937	Trousdale, Okla.
Matthews, Newman Sanford	1904	Clarendon, Okla.	Oklahoma University	1937	Oklahoma City, Okla.
Gross, Francis Warren	1912	Orr, Okla.	Oklahoma University	1937	Erie, Pa.
Petway, Aileen (F)	1911	Eastman, Ga.	Oklahoma University	1937	Oklahoma City, Okla.
Ohl, Charles Wallis	1909	Vineland, N. J.	Hanemann Medical	1937	Chickasha, Okla.
Kernek, Clyde	1909	Gatewood, Mo.	Oklahoma University	1937	Oklahoma City, Okla.

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Speaker, House of Delegates, Dr. J. D. Osborn, Jr., Frederick.

Vice Speaker, House of Delegates, Dr. P. P. Nesbitt, Medical Arts Building, Tulsa.

Delegates to the A. M. A., Dr. W. Albert Cook, Medical Arts Building, Tulsa, 1938-39; Dr. McLain Rogers, Clinton, 1937-1938.

Meeting Place, Oklahoma City, May, 1939.

SPECIAL COMMITTEES 1938-39

Annual Meeting: Dr. H. K. Speed, Sayre; Dr. W. A. Howard, Chelsea; Dr. L. S. Willour, McAlester.

Conservation of Hearing: Dr. H. F. Vandever, Chairman, Enid; Dr. J. B. Hollis, Mangum; Dr. Chester McHenry, Oklahoma City.

Conservation of Vision: Dr. W. M. Gallaher, Chairman, Shawnee; Dr. Frank R. Vieregg, Clinton; Dr. Pauline Barker, Guthrie.

Crippled Children: Dr. Earl McBride, Chairman, Oklahoma City; Dr. Roy L. Fisher, Frederick; Dr. M. B. Glismann, Okmulgee.

Industrial Service and Traumatic Surgery: Dr. Cyril C. Clymer, Medical Arts Bldg., Oklahoma City; Dr. J. Wm. Finch, Hobart; Dr. J. A. Rutledge, Ada.

Maternity and Infancy: Dr. George R. Osborn, Chairman, Tulsa; Dr. P. J. DeVanney, Sayre; Dr. Leila E. Andrews, Oklahoma City.

Necrology: Dr. G. H. Stagner, Chairman, Erick; Dr. James L. Shuler, Durant; Dr. S. D. Neely, Muskogee.

Post Graduate Medical Teaching: Dr. Henry H. Turner, Chairman, Oklahoma City; Dr. H. C. Weber, Bartlesville; Dr. Ned R. Smith, Tulsa.

Study and Control of Cancer: Dr. Wendell Long, Chairman, Oklahoma City; Dr. Paul B. Champlin, Enid; Dr. Ralph McGill, Tulsa.

Study and Control of Tuberculosis: Dr. Carl Puckett, Chairman, Oklahoma City; Dr. W. C. Tisdal, Clinton; Dr. F. P. Baker, Talihina.

ADVISORY COUNCIL FOR AUXILIARY

Dr. H. K. Speed, Chairman ..... Sayre
Dr. C. J. Fishman ..... Oklahoma City
Dr. W. S. Larrabee ..... Tulsa
Dr. J. M. Watson ..... Enid
Dr. T. H. McCarley ..... McAlester

STANDING COMMITTEES 1938-39

Medical Defense: Dr. O. E. Templin, Chairman, Alva; Dr. L. C. Kuyrkendall, McAlester; Dr. E. Albert Aisenstadt, Picher.

Medical Economics: Dr. C. B. Sullivan, Cordell, Chairman; Dr. J. L. Patterson, Duncan; Dr. W. M. Browning, Waurika.

Medical Education and Hospital: Dr. V. C. Tisdal, Chairman, Elk City; Dr. Robert U. Patterson, Oklahoma City; Dr. H. M. McClure, Chickasha.

Public Policy and Legislation: Dr. Finis W. Ewing, Surety Bldg., Chairman, Muskogee; Dr. Tom Lowry, 1200 North Walker, Oklahoma City; Dr. O. C. Newman, Shattuck.

(The above committee co-ordinated by the following, selected from each councilor district.)

District No. 1.—Arthur E. Hale, Alva.
District No. 2.—McLain Rogers, Clinton.
District No. 3.—Thomas McElroy, Ponca City.
District No. 4.—L. H. Ritzhaupt, Guthrie.
District No. 5.—P. V. Annadown, Sulphur.
District No. 6.—R. M. Shepard, Tulsa.
District No. 7.—Sam A. McKeel, Ada.
District No. 8.—J. A. Morrow, Sallisaw.
District No. 9.—W. A. Tolleson, Eufaula.
District No. 10.—J. L. Holland, Madill.

Scientific Exhibits: Dr. E. Rankin Denny, Chairman, Tulsa; Dr. Robert H. Akin, Oklahoma City; Dr. R. C. Pigford, Tulsa.

Scientific Work: Dr. W. G. Husband, Chairman, Hollis; Dr. J. S. Rollins, Prague; Dr. J. L. Day, Supply.

Public Health:

Chairman—Dr. G. S. Baxter, Shawnee.

District No. 1.—C. W. Tedrowe, Woodward.
District No. 2.—E. W. Mabry, Altus.
District No. 3.—L. A. Mitchell, Stillwater.
District No. 4.—J. J. Gable, Norman.
District No. 5.—Geo. S. Barber, Lawton.
District No. 6.—C. E. Bradley, Tulsa.
District No. 7.—G. S. Baxter, Shawnee.
District No. 8.—M. M. De Arman, Miami.
District No. 9.—T. H. McCarley, McAlester.
District No. 10.—J. B. Clark, Coalgate.

SCIENTIFIC SECTIONS

General Surgery: Dr. F. L. Flack, Chairman, Nat'l Bank of Tulsa Bldg., Tulsa; Dr. John E. McDonald, Vice-Chairman, Medical Arts Bldg., Tulsa; Dr. John F. Burton, Secretary, Osler Building, Oklahoma City.

General Medicine: Dr. Frank Nelson, Chairman, 603 Medical Arts Bldg., Tulsa; Dr. E. R. Musick, Vice-Chairman, Medical Arts Bldg., Oklahoma City; Dr. Milam McKinney, Medical Arts Bldg., Oklahoma City.

Eye, Ear, Nose & Throat: Dr. E. H. Coachman, Chairman, Manhattan Bldg., Muskogee; Dr. F. M. Cooper, Vice-President, Medical Arts Bldg., Oklahoma City; Dr. James R. Reed, Secretary, Medical Arts Bldg., Oklahoma City.

Obstetrics and Pediatrics: Dr. C. W. Arrendell, Chairman, Ponca City; Dr. Carl F. Simpson, Vice-Chairman, Medical Arts Bldg., Tulsa; Dr. Ben H. Nicholson, Secretary, 300 West Twelfth Street, Oklahoma City.

Genito-Urinary Diseases and Syphilology: Dr. Elijah Sullivan, Chairman, Medical Arts Bldg., Oklahoma City; Dr. Henry Browne, Vice-Chairman, Medical Arts Bldg., Tulsa; Dr. Robert Akin, Secretary, 400 West Tenth, Oklahoma City.

Dermatology and Radiology: Dr. W. A. Showman, Chairman, Medical Arts Bldg., Tulsa; Dr. E. D. Greenberger, Vice-Chairman, McAlester; Dr. Hervey A. Foerster, Secretary, Medical Arts Bldg., Oklahoma City.

STATE BOARD OF MEDICAL EXAMINERS

Dr. Thos. McElroy, Ponca City, President; Dr. C. E. Bradley, Tulsa, Vice-President; Dr. J. D. Osborn, Jr., Frederick, Secretary; Dr. L. E. Emanuel, Chickasha; Dr. W. T. Ray, Gould; Dr. G. L. Johnson, Pauls Valley; Dr. W. W. Osgood, Muskogee.

STATE COMMISSIONER OF HEALTH

Dr. Chas. M. Pearce, Oklahoma City.

COUNCILORS AND THEIR COUNTIES

District No. 1: Texas, Beaver, Cimarron, Harper, Ellis, Woods, Woodward, Alfalfa, Major, Dewey—Dr. O. E. Templin, Alva. (Term expires 1940.)

District No. 2: Roger Mills, Beckham, Greer, Harmon, Washita, Kiowa, Custer, Jackson, Tillman—Dr. V. C. Tisdal, Elk City. (Term expires 1939.)

District No. 3: Grant, Kay, Garfield, Noble, Payne, Pawnee—Dr. A. S. Risser, Blackwell. (Term expires 1938.)

District No. 4: Blaine, Kingfisher, Canadian, Logan, Oklahoma, Cleveland—Dr. Philip M. McNeill, Oklahoma City. (Term expires 1938.)

District No. 5: Caddo, Comanche, Cotton, Grady, Love, Stephens, Jefferson, Carter, Murray—Dr. W. H. Livermore, Chickasha. (Term expires 1938.)

District No. 6: Osage, Creek, Washington, Nowata, Rogers, Tulsa—Dr. James Stevenson, Medical Arts Bldg., Tulsa. (Term expires, 1938.)

District No. 7: Lincoln, Pontotoc, Pottawatomie, Okfuskee, Seminole, McClain, Garvin, Hughes—Dr. J. A. Walker, Shawnee. (Term expires 1939.)

District No. 8: Craig, Ottawa, Mayes, Delaware, Wagoner, Adair, Cherokee, Sequoyah, Okmulgee, Muskogee—Dr. E. A. Aisenstadt, Picher. (Term expires 1939.)

District No. 9: Pittsburg, Haskell, Latimer, LeFlore, McIntosh—Dr. L. C. Kuyrkendall, McAlester. (Term expires 1939.)

District No. 10: Johnson, Marshall, Coal, Atoka, Bryan, Choctaw, Pushmataha, McCurtain—Dr. J. S. Fulton, Atoka. (Term expires 1939.)

OFFICERS OF COUNTY SOCIETIES, 1938

COUNTY	PRESIDENT	SECRETARY
Adair		
Alfalfa	F. K. Slaton, Helena	L. T. Lancaster, Cherokee
Atoka-Coal	J. S. Fulton, Atoka	J. B. Clark, Coalgate
Beckham	R. C. McCreery, Erick	P. J. DeVanney, Sayre
Blaine	J. S. Barnett, Hitchcock	W. F. Griffin, Watonga
Bryan	P. L. Cain, Albany	Jas. L. Shuler, Durant
Caddo	J. Worrell Henry, Anadarko	P. H. Anderson, Anadarko
Canadian	A. L. Johnson, El Reno	G. D. Funk, El Reno
Carter	T. J. Jackson, Ardmore	Emma Jean Cantrell, Wilson
Cherokee	P. H. Medearis, Tahlequah	H. A. Masters, Tahlequah
Choctaw	G. E. Harris, Hugo	F. L. Waters, Hugo
Cleveland	O. E. Howell, Norman	J. L. Haddock, Jr., Norman
Coal	(See Atoka)	
Comanche	E. B. Dunlap, Lawton	Reber M. Van Matre, Lawton
Cotton	W. W. Cotton, Walters	G. W. Baker, Walters
Craig	W. R. Marks, Vinita	F. T. Gastineau, Vinita
Creek	C. R. McDonald, Mannford	J. F. Curry, Sapulpa
Custer	Ross Deputy, Clinton	Harry Cushman, Clinton
Garfield	E. J. Wolfe, Waukomis	John R. Walker, Enid
Garvin	G. L. Johnson, Pauls Valley	John R. Callaway, Pauls Valley
Grady	L. E. Wood, Chickasha	R. E. Baze, Chickasha
Grant	I. V. Hardy, Medford	E. E. Lawson, Medford
Greer	Leb B. Pearson, Mangum	J. B. Hollis, Mangum
Harmon	W. G. Husband, Hollis	R. H. Lynch, Hollis
Haskell	A. T. Hill, Stigler	N. K. Williams, McCurtain
Hughes	W. L. Taylor, Holdenville	Imogene Mayfield, Holdenville
Jackson	Jas. E. Ensey, Altus	J. M. Allgood, Altus
Jefferson	C. S. Maupin, Waurika	C. M. Maupin, Waurika
Kay		R. G. Obermiller, Ponca City
Kingfisher	John R. Taylor, Kingfisher	F. C. Lattimore, Kingfisher
Kiowa	T. M. Bonham, Hobart	J. Wm. Finch, Hobart
Latimer	R. L. Rich, Red Oak	E. B. Hamilton, Wilburton
LeFlore	E. M. Woodson, Poteau	W. L. Shippey, Poteau
Lincoln	E. F. Hurlbut, Meeker	Ned Burleson, Prague
Logan	F. R. First, Crescent	E. O. Barker, Guthrie
Marshall	J. H. Logan, Lebanon	J. F. York, Madill
Mayes	S. C. Rutherford, Locust Grove	E. H. Werling, Pryor
McClain	J. E. Cochran, Bvars	R. L. Royster, Purcell
McCurtain	R. D. Williams, Idabel	R. H. Sherrill, Broken Bow
McIntosh	D. E. Little, Eufaula	Wm. A. Tolleson, Eufaula
Murray	P. V. Annadown, Sulphur	Richard M. Burke, Sulphur
Muskogee	Finis W. Ewing, Muskogee	S. D. Neely, Muskogee
Noble	J. W. Francis, Perry	T. F. Renfrow, Billings
Nowata	M. B. Scott, Delaware	H. M. Prentiss, Nowata
Okfuskee	L. J. Snickard, Okemah	C. M. Bloss, Okemah
Oklahoma	C. J. Fishman, Oklahoma City	John F. Burton, Oklahoma City
Okmulgee	V. M. Wallace, Morris	M. B. Glismann, Okmulgee
Osage	R. O. Smith, Hominy	Geo. Hemphill, Pawhuska
Ottawa	Benj. W. Ralston, Commerce	W. Jackson Sayles, Miami
Pawnee	R. E. Jones, Pawnee	M. L. Saddoris, Cleveland.
Payne	E. M. Harris, Cushing	John W. Martin, Cushing
Pittsburg	A. R. Russell, McAlester	Ed. D. Greenberger, McAlester
Pontotoc	W. F. Dean, Ada	Glen W. McDonald, Ada
Pottawatomie	E. Eugene Rice, Shawnee	F. Clinton Gallaher, Shawnee
Pushmataha	E. S. Patterson, Antlers	D. W. Connally, Antlers
Rogers	F. A. Anderson, Claremore	W. A. Howard, Chelsea
Seminole	A. N. Deaton, Wewoka	Claude B. Knight, Wewoka
Stephens	W. T. Salmon, Duncan	Fred T. Hargrove, Duncan
Texas		R. B. Hayes, Guymon
Tillman	J. E. Childers, Tipton	O. G. Bacon, Frederick
Tulsa	M. J. Searle, Tulsa	Roy L. Smith, Tulsa
Wagoner	S. R. Bates, Wagoner	Francis S. Crane, Wagoner
Washington	J. E. Crawford, Bartlesville	J. V. Athey, Bartlesville
Washita	J. Paul Jones, Dill	Gordon Livingston, Cordell
Woods	Arthur E. Hale, Alva	Oscar E. Templin, Alva
Woodward	C. W. Tedrowe, Woodward	V. M. Rutherford, Woodward

NOTE—Corrections and additions to the above list will be cheerfully accepted.